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FIRESCOPE

IMPLEMENTATION PLAN

JANUARY 1977

USDA - Forest Service

PSW GRANT NO. 25

FIRESCOPE

IMPLEMENTATION PLAN

FIRESCOPE PROGRAM OFFICE
UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
PACIFIC SOUTHWEST FOREST AND RANGE EXPERIMENT STATION

FOREST FIRE LABORATORY
RIVERSIDE, CALIFORNIA

JANUARY 1977

FOREWORD

The purpose of this document is to provide substantial supporting information for a request of $1.2 million for Fiscal Year 1978 to begin the necessary tasks which lead to implementing the FIRESCOPE concept in Southern California by the end of Fiscal Year 1981. Presented is a four-year plan which displays a process of achieving implementation without requiring immediate commitment of funds needed past the first year. The plan is structured to allow all FIRESCOPE partners to identify the level of implementation which would best suit their needs and obligations through the four year implementation period.

The material contained herein is organized into four sections. The Summary presents an overview of the FIRESCOPE Program and the proposed Implementation Plan. The Introduction contains background, a description of FIRESCOPE Program activities to date and information on partner contributions over the past five years. The details of the proposed FIRESCOPE Implementation Plan are contained in the third section. Supplementary material follows in the Appendices.

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SUMMARY

The Southern California fire problem is unique. Urban expansion has brought expensive development into close contact with wildland ground cover, much of which is arid brushland highly vulnerable to fire and subsequent flooding. Adding to the problem is Southern California's long arid season, steep topography and Santa Ana winds which produce critical wildland burning conditions seldom equaled elsewhere. Santa Ana wind driven fires have occurred, in varying degrees, every year in Southern California. Catastrophic fires occurred in 1970 with considerable loss of life and property. This led to aggressive action by many groups to integrate programs addressing the critical problems of Southern California wildland fires. Fighting such fires is often made difficult because of rapid changes in fire situations and in many instances the necessity to coordinate the actions of a number of agencies.

FIRESCOPE, a Research, Development and Application (RD&A) program, resulted from Congressional action in 1971 - 1972 which gave the Forest Service the mission of assisting Southern California fire services in the development of means to provide a significant step forward in multi-agency coordination on multi-jurisdictional fires.

The principal partners with Forest Service Fire Research in FIRESCOPE have been seven California agencies - California Region (USFS), California Department of Forestry, California Office of Emergency Services, Los Angeles City Fire Department, Los Angeles County Fire Department, Santa Barbara County Fire Department, and the Ventura County Fire Department, each of which have furnished services and support to the FIRESCOPE Program since its inception.

Upon establishment of FIRESCOPE an initial problem analysis identified five major Program Components to be pursued to meet the Program Mission. These are to:

- Develop standard terminology and incident organization structure
- Provide multi-agency communications
- Coordinate regional resources during major incidents
- Develop improved methods for status-keeping and forecasting of fire behavior
- Provide multi-agency training in systems developed under FIRESCOPE

Two specific systems evolved which are directed toward achieving these components.

- Multi-Agency Coordination System (MACS): The "managerial" element of FIRESCOPE which melds the day-to-day operations of partner agencies and guides the application of FIRESCOPE.

- Incident Command System (ICS): An on-the-ground "people" system for on-site management of emergencies.

Accompanying research and development efforts on the associated hardware, software, training and implementation needs have been carried out in the following areas and will be completed in Autumn, 1977.

o	Meteorological Network	o	Communications
o	Data Base	o	Coordination Systems
o	Training	o	Incident Intelligence Systems

Implementation of some aspects of the Program has already taken place. The developed ICS is being adopted by many fire agencies as their standard operating procedure for emergencies and the first step in training has begun in the current partner fire protection organizations for the Core Area. In support of operational fire situations an interim Operations Coordination Center (OCC) has been activated and utilizes a fire spread model for preliminary assessment of fire potential.

The proposed four-year implementation phase is based upon current understanding of FIRESCOPE in its full capability configuration. A myriad of system options are available for operational implementation which provide various levels of systems capability. Selected options will be examined during the first year for technical and economic justification. The plan is designed to give all partners a voice in the future, which includes selection of the option to be implemented, while maintaining timely coordination through continuation of the current viable Task Force, Operations Team and Board of Directors. This will allow for partner participation in decisions affecting future funding commitments.

Full implementation is estimated at $16.2 million of Federal FIRESCOPE funds, with additional ongoing support required from all involved. The first year will require $1.2 million, a major part of which is directed towards planning integration and evaluation to assure that Program options are cost-beneficial, satisfy the Program Mission, fit the needs and capabilities of involved partners and will provide for continued training and operation of current FIRESCOPE systems at approximately the same level as FY 1977. Detailed planning will be done to fully describe the requirements and options of future years.

The second year of implementation sees an increased level of activity including purchase of some system hardware components which have a high degree of utility. The third-and fourth-year activities are contingent upon the decisions and progress to that time.

The details of implementation are described in an eleven-element breakdown in the Section entitled FIRESCOPE Implementation. The basic elements are:

- o Program Management - Management of the integration and implementation of FIRESCOPE
- o Planning Integration and Evaluation (PI&E) - Provides information for management decisions
- o Multi-Agency Coordination System (MACS) - Maintains the "managerial" element for day-to-day operations
- o Incident Command System (ICS) - Provides for on-site management of resources during emergencies
- o Infrared Systems Transporters - Acquires transporters for IR equipment
- o Training Coordination - Supports all aspects of training operations
- o Communications - Provides communications hardware for operation and integration of ICS and MACS
- o Non-Fuels Data Base - Provides a common map system for all agencies
- o Fuels Data Base - Collects and processes wildland fuel data
- o Meteorological Network - Acquires hardware for obtaining meteorological data
- o Computer Systems - Implements a computerized incident information system.

Each one of the above elements is directed toward achievement of one or more of the Program Components.

As FIRESCOPE progresses from the current research phase into implementation, the State and local agencies are expected to increase their share of the total operation and maintenance expenses. The total operation and maintenance expenses will be determined by the level of systems which

are selected by the partners for implementation. If FIRESCOPE is fully implemented the costs for systems operation and maintenance are estimated at $160-175 thousand per year for Forest Service Region 5 and $700-800 thousand per year for the State and local agencies involved.

INTRODUCTION

INTRODUCTION

Over 12 million people live in a seven-county area in Southern California, an area having over 15 million acres of wildland. Urban expansion has brought expensive development into close contact with this wildland resource, much of it arid brushland highly vulnerable to fire and subsequent flooding, which creates a critical wildfire setting. In 1970, fires burned 500,000 acres in the area, destroying 700 structures and taking 16 lives. The cost approached $233 million. Intense and costly wildland fires since 1970 have served to remind us that the wildland-urban conflagration problems always exist. Subsequent to the disastrous fire season of 1970, the need for a multi-agency communications and coordination system for Southern California was formally recognized by groups such as: (a) the Governor's Task Force on California's Wildland Fire Problem, (b) heads of the Southern California fire service agencies, and (c) interested groups (Watershed Fire Council) and (d) legislators from the Southern California area, who focused Federal Government attention on the problem.

GENERAL BACKGROUND

The Southern California wildland fire problem was highlighted before the United States House of Representatives during appropriation hearings of the 92nd Congress. The FIRESCOPE Program resulted from these hearings and the funding for the beginning basic research was summarized in "Hearings before a Subcommittee of the Committee on Appropriation, House of Representatives, 92nd Congress, 2nd Session, 1971."

The mission of the FIRESCOPE Program, as described in the Program Charter approved by the Chief of the Forest Service in 1973, is to "make a quantum jump in the capability of Southern California wildland fire protection agencies to effectively coordinate interagency action and to allocate suppression resources in dynamic, multiple-fire situations."

The Charter described a three-part program for system development and implementation.

The parts are:

Part I. "Coordination System Policy and Operations" involving the identification of authorities and resolution of interagency constraints associated with the implementation of a multi-agency resource coordination system, and the definition of functional requirements for its operational use.

Part II. "Coordination System Development" translating the requirements generated in Part I into the hardware design necessary to implement the system.

Part III. "System Implementation" consisting of fabrication and installation of any needed hardware and software programs.

Completion of the three-part program was envisioned as a five-year effort. Major efforts have concentrated on Research and Development (R&D) with only limited Federal funds available for implementation and training. The program required to implement FIRESCOPE in Southern California is detailed in the Section entitled FIRESCOPE Implementation.

PROGRAM DESCRIPTION

Upon establishment of the FIRESCOPE Research, Development, and Application (RD&A) Program, an initial problem analysis was performed which identified five major Program Components to be pursued. These are:

- o Develop standard terminology and incident organization structure
- o Provide multi-agency communications
- o Coordinate regional resources during major incidents
- o Develop improved methods for status-keeping and forecasting of fire behavior
- o Provide multi-agency training in systems developed under FIRESCOPE

To meet these needs the Program has centered on two specific systems. These are:

Multi-Agency Coordination System (MACS)

The "managerial" element of FIRESCOPE which melds the day-to-day operations of partner agencies and guides the application of FIRESCOPE.

- o Improved interagency coordination at top management levels
- o Allocation and timely commitment of multi-agency resources on problem incidents

- o Advanced electronic systems to:
  - store and retrieve status of regional emergency resources
  - display physical and environmental data base
  - perform real time fire behavior predictions
  - assess current regional fire danger
- o Centralized coordination of emergency information
- o Training programs
- o Pre-suppression planning assistance to fire protection agencies

Incident Command System (ICS)

An on-the-ground "people" system for on-site management of emergencies.

- o Standard organizational structure and procedures for multi-jurisdictional situations
- o Standard description of resources and terminology
- o Modern electronic systems to provide:
  - split-second inventory of resources
  - infrared for fireline intelligence
  - computerized prediction of fire potential
  - automatic telemetry of critical fire weather data
- o Modern radio hardware for:
  - improved fireline communications
  - interagency communications

The research and development efforts on technologies required in support of the MACS and ICS systems were focused on achievement of the Program Components. The relationship and integration between the

research and development efforts and the Program Components are illustrated in Figure 1. A description of each of these efforts follows:

Meteorological Network: This network will provide meteorological information for real-time fire modelling, fire-danger rating predictions and decision-making associated with incidents. Prototype sub-systems have been installed and are being evaluated. For example, one sub-system is fully automated and controlled by a mini-computer. Another uses Geostationary Operational Environment Satellites (GOES) Data Collection System (DCS).

Data Base: Research on methods of providing the fuels and non-fuels data base information has been conducted. An orthophoto mapping process will provide a standard map system with terrain and other physical feature data for the FIRESCOPE region. (The FIRESCOPE region is approximately 15,000,000 acres of wildland, urban and urban/wildland interface within the seven Southern California counties. It excludes desert areas in the easterly portion of Southern California.) These topographic data will be digitized, processed, stored, and used for fire modelling and location identification during incidents. The acquisition and development of the non-fuels data base are a joint effort of the Forest Service and the U.S. Geological Survey (USGS). For the fuels data use of satellite (ERTS) imagery for study of vegetative classification has been proven feasible. An interim fuels data base has been developed for use at the Operations Coordination Center (OCC).

Training: The development of ICS training documents and procedures has constituted a major research effort. The training products have been closely coordinated and integrated with the developing designs of ICS and MACS. Consideration has been given to the potential requirements of the final communications design.

Complete ICS description, position manuals, standards, and requirements have been produced as guides for the first generation of implementation. A Field Operational Guide has been published for fireline use.

Using these documents, partners have begun training of operational personnel involved in FIRESCOPE. Tests and evaluation by partners have resulted in one revision of the products; further evaluations and revisions are planned prior to September 1977.

Communications: Communication workload and requirements have been defined. New equipment and procedures have been investigated to provide more accurate information and better data flow from fireline through supervisors to Incident Command Posts, Agency Dispatch Centers, and the Operations Coordination Center. Synthesizer

Program Component \ Research Effort	Meteorological Network	Data Base	Training	Communications	Coordination Systems	Incident Intelligence Systems		
						Information Systems	Fire Behavior Predictions	Infrared Systems
Develop Standard Terminology and Incident Organization Structure			X		X			
Provide Multi-Agency Communications			X	X	X			
Coordinate Regional Resources During Major Incidents		X	X	X	X	X	X	
Develop Improved Methods for Status Keeping and Forecasting Fire Behavior	X	X	X	X	X	X	X	X
Provide Multi-Agency Training in Systems Developed Under FIRESCOPE	X	X	X	X	X	X	X	X

Figure 1. - Relationships between Program Components and Research and Development Effort

radios, multi-channel repeaters, satellites, are all being explored for their potential contribution to existing interagency communication systems.

Coordination Systems: Each of the major FIRESCOPE partners has operated essentially different and independent suppression organizations for decades. A major research effort was invested in the development and acceptance of two unique organizational systems. These have led to an unprecedented change in multi-agency coordination systems:

- The Multi-Agency Coordination System is being designed to improve regional coordination and allocation of resources.

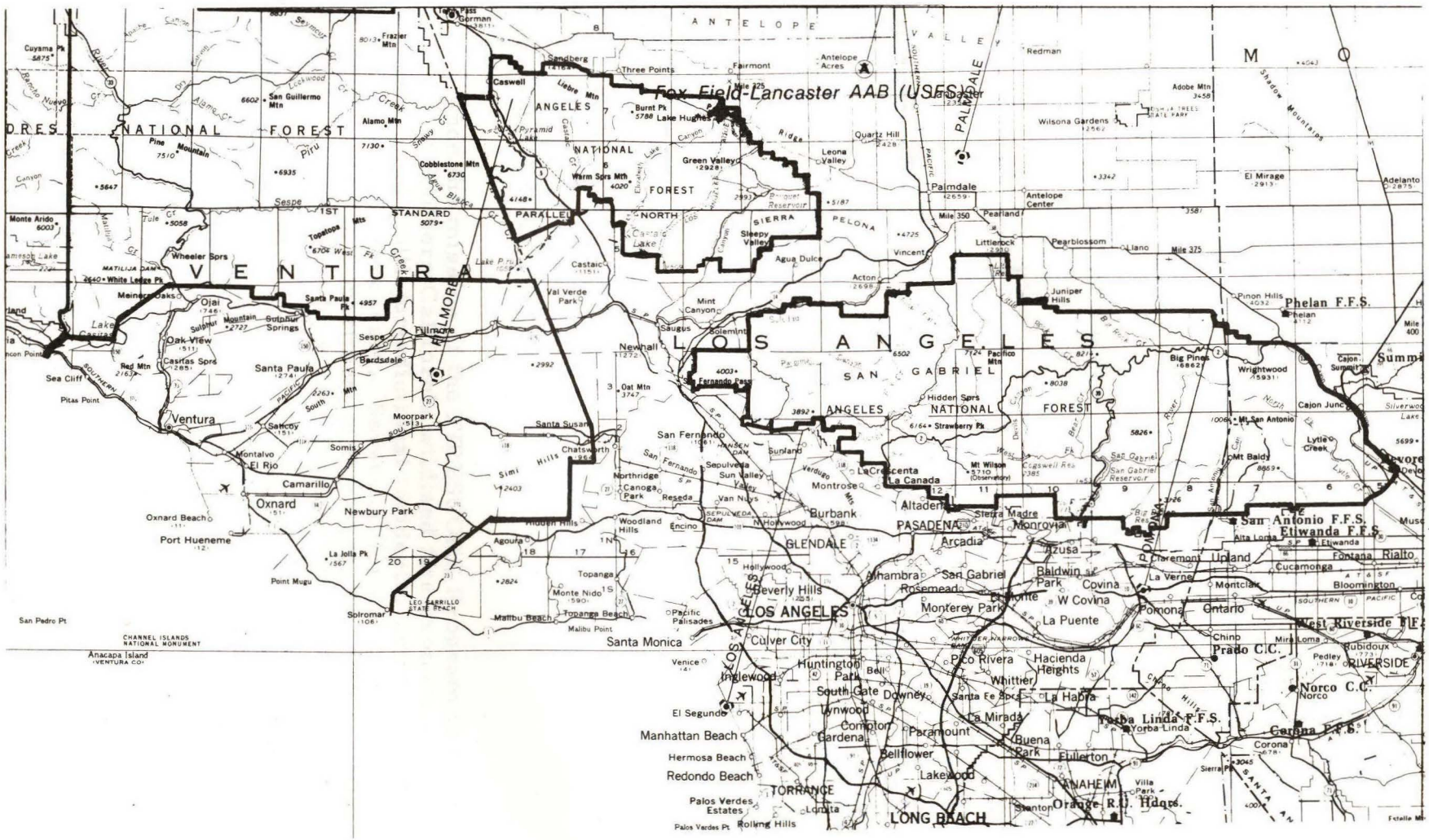
  The interim Operations Coordination Center serves as the focal point of MACS and provides status on fire potential, suppression resources, and other essential data. The fire spread model is operated here, and its use is known to have successfully influenced suppression strategy on actual fires during 1976.

- The Incident Command System has been developed using one common organization structure and common terminology. Initial acceptance of the ICS has been exceptional (see letters, Appendix A).

To aid in the evaluation and improvement of these coordination systems, a "Core Area" has been designated. It is located in the northern portion of the FIRESCOPE region (see Figure 2). Within the Core Area the ICS will be implemented incrementally. MACS objectives and OCC operations during incidents can be examined concurrently. In addition, the common mapping, fuels data base requirements, meteorological network components, and a trial communications configuration will also be implemented in the Core Area. The results of integrating all of these will provide vitally important information on the configuration and implementation of the final system throughout the rest of the FIRESCOPE region.

Incident Intelligence: Research and development efforts will provide information required to implement computerized information systems infrared equipment and fire behavior prediction capability.

Preliminary performance specifications will be produced for the operational software and hardware required for data acquisition, processing, storage, and display. The basic modules being considered are: Fire Spread; Initial Attack Assessment; Fire Behavior Assessment; Line Production Assessment; Resource Status Keeping and Resource Allocation; and Cost Assessment. Currently a model to


Fox Field-Lancaster AAB (USFS)
ANTELOPE VALLEY
PALMDALE
Redman
Lancaster
Wilsona Gardens
Adobe Mtn
Shadow Mountains
Three Points
Fairmont
Antelope Acres
Sandberg
Caswell
Liebre Mtn
Burnt Pk
Lake Hughes
Quartz Hill
Leona Valley
Green Valley
Warm Scrs Mtn
Palmdale
Antelope Center
Pearland
Littlerock
Pearblossom
Llano
El Mirage
Adelanto
Agua Dulce
Vincent
Acton
Juniper Hills
Pinon Hills
Phelan F.F.S.
Phelan
Sleepy Valley
Castaic
Val Verde Park
Mint Canyon
Saugus
Newhall
Solemint
Pacifico Mtn
Big Pines
Wrightwood
Cajon Summit
Cajon Junc
Mt San Antonio
Lytle Creek
Hidden Scrs
Strawberry Pk
Mt Wilson
Mt Baldy
La Crescenta
La Canada
Altadena
Sierra Madre
Monrovia
San Antonio F.F.S.
Etiwanda F.F.S.
Alta Loma
Etiwanda
Fontana
Rialto
Cucamonga
Upland
Claremont
Montclair
Bloomington
Arcadia
Azusa
Baldwin Park
La Verne
Covina
W Covina
Rosemead
Alhambra
San Gabriel
Monterey Park
La Puente
Pomona
Ontario
West Riverside H.F.
Chino
Mira Loma
Rubidoux
Pedley
RIVERSIDE
Prado C.C.
Norco C.C.
Norco
Yorba Linda F.F.S.
Yorba Linda
Corona F.F.S.
Corona
Fullerton
Buena Park
La Habra
La Mirada
Whittier
Pico Rivera
Hacienda Heights
Santa Fe Spgs
Paramount
Bellflower
Lakewood
Gardena
Compton
Lynwood
South Gate
Downey
Bell
Huntington Park
Inglewood
El Segundo
Manhattan Beach
Hermosa Beach
Redondo Beach
TORRANCE
Palos Verdes Estates
Rolling Hills
Lomita
LONG BEACH
Orange R.D. Hdqrs.
Stanton
Villa Park
ANAHEIM
Culver City
Venice
Santa Monica
Malibu Beach
Topanga Beach
Pacific Palisades
Topanga
Monte Nido
Hollywood
Beverly Hills
LOS ANGELES
GLENDALE
Burbank
PASADENA
Encino
Woodland Hills
Canoga Park
Northridge
Reseda
Van Nuys
Sepulveda
Sun Valley
Sunland
Tujunga
San Fernando
Chatsworth
Santa Susana
Simi Hills
Moorpark
Somis
Montalvo
El Rio
Ventura
Oxnard
Oxnard Beach
Port Hueneme
Camarillo
Newbury Park
Point Mugu
La Jolla Pk
Solromar
Agoura
Hidden Hills
Calabasas
Las Virgenes
Malibu Creek
Malibu Lake
Triunfo Pass
Lake Sherwood
Oak View
Casitas Spgs
Red Mtn
Sea Cliff
Pitas Point
Santa Paula
Bardsdale
Fillmore
Sespe
Ojai
Meiners Oaks
Wheeler Spgs
White Ledge Pk
Santa Paula Pk
Sulphur Mountain
Sulphur Springs
Topatopa Mts
West Fk
Piru
Alamo Mtn
Cobblestone Mtn
Frazier Mtn
San Guillermo Mtn
Pine Mountain
Cuyama Pk
Monte Arido
Tule Pk
Lockwood Valley
Alamo Cr
Sespe Cr
Piru Cr
Sespe Creek
Santa Clara River
Lake Piru
Lake Castaic
Pyramid Lake
Elizabeth Lake
Quail Lake
Littlerock Res
Pearblossom Res
Big Rock Cr
Little Rock Cr
Mile 350
Mile 375
Mile 400
Mile 325
Mile 300
Fernando Pass
Oat Mtn
Pacific Crest Trail
Santa Clara River
Los Angeles River
San Gabriel River
Big Dalton Wash
Devils Canyon
Cogswell Res
San Gabriel Reservoir
Big Rock Cr
Silverwood Lake
Lytle Creek
Cajon Junc
Summit
Devore
Etiwanda
Fontana
Rialto
Cucamonga
Upland
Claremont
Montclair
Bloomington
Ontario
Pomona
Chino
Mira Loma
Rubidoux
Pedley
RIVERSIDE
Norco
Corona
Yorba Linda

assess the spread potential of fires prior to initial attack is being operationally used at the OCC and in the four Southern California National Forests. Fire intelligence information was telemetered to the ground during operations in 1974 and 1976 using an infrared line scan system (FIRESCAN) mounted in a fixed-wing aircraft.

Federal funding for the RD&A Program to date, is summarized in Table 1 below:

Table 1 - FIRESCOPE RD&A Expenditures
(Thousand Dollars)

	Fiscal Year				
	1973	1974	1975	1976	1977
Expenditures	840	883	1000	975	975

Although the R&D conducted on FIRESCOPE is directed toward Southern California, national benefits can be expected. A paper on potential benefits was prepared by the Program Office in June of 1976 (Appendix B). Since that time, the Program Office has consulted with Boise Interagency Fire Center on their adaptation of a computerized Resource Status Keeping System. Organizational and operational options for multi-agency coordination were presented to Colorado's six-agency Northern Front Range Fire Alliance.

PROGRAM PARTICIPANTS

Since the mission of the FIRESCOPE Program is to improve the capability of Southern California wildland fire protection agencies to meet the problems of multi-jurisdictional incidents, active agency participation in the Program is necessary. Seven California agencies, California Region - USFS, California Department of Forestry, California Office of Emergency Services, Los Angeles City Fire Department, Los Angeles County Fire Department, Santa Barbara County Fire Department, and the Ventura County Fire Department have furnished services and support to the FIRESCOPE Program since its conception. Funding for the Research Program was provided by the Federal Government and supplemented by contributions of manpower and equipment by the State and local agencies.

The State and local partners have been extremely generous with their contributions toward FIRESCOPE. From 1972 to 1975 they provided nearly $750,000 worth of manpower, equipment, and funds to support the Forest Service Research effort. During 1976, partner agencies have:

1. Contributed over 1000 man-days to train personnel in the Incident Command System (ICS).

2. Enthusiastically adopted FIRESCOPE common terminology and standard organizational structure for Southern California.

3. Constructed and activated an interim Operations Coordination Center.

4. Trained and activated two complete, multi-agency ICS Teams prepared to manage major wildland fires under the FIRESCOPE concept.

5. Integrated the daily use of the rudimentary Fire Spread Model into their operations (requiring changes in policy for some partners).

This brings total partner contributions to over $1 million since 1972.

FIRESCOPE

IMPLEMENTATION

FIRESCOPE IMPLEMENTATION

This section presents a detailed plan for future FIRESCOPE implementation. Some interim, or preliminary, implementation efforts have already been accomplished at partner expense as described in the Introduction section of this report. These interim advances have been made in training and coordination activities based upon the earlier design recommendations of Forest Service Research.

The final performance specifications, procedures and standards for MACS and ICS will be completed by September 1977. Performance specifications for communications, fire behavior prediction models, meteorological models, computer software and fire management models, computer systems, meteorological network requirements, data base acquisition, infrared and mapping requirements will also be completed at this time.

This plan recognizes the difficulties inherent in melding the restrictions of budget process timing, already committed implementation efforts, and the uncertainties of yet-to-be-completed research. As such, the four-year proposal presented here enumerates the first-year tasks in detail, the second-year tasks in broader terms, and the final years only in the generalized descriptions necessary to allow intelligent progress to an ultimate configuration of the intended full design.

Construction of the Implementation Plan in this manner allows, in fact requires, that all partners have a voice in the future configuration of FIRESCOPE. The implementation phase has been designed to bring policy decision information,prior to major commitment for the full system, to the partners through first- and second-year studies and continued partner participation in the decision processes now being performed by the Task Force, Operations Team, and Board of Directors.

PROGRAM PLAN

Implementation can be described by year as follows:

First Year: The first year of the Program is designed to emphasize planning, integration, and evaluation of FIRESCOPE. Most of the effort will be expended to assure that viable Program options are cost-beneficial, satisfy the Program Mission, and fit the needs and capabilities of involved partners. In addition, detailed planning will be done to fully describe the requirements and options of the later years. The potential advantages of incremental additions of system capabilities will be quantified. Preliminary steps will be

taken to locate a permanent site and to obtain preliminary structural layout plans for the OCC. Evaluation of some hardware items will be accomplished.

Partner contributions, in the form of ICS training, Core Area operations, and interim OCC operations will continue at much the same levels as in 1976 and 1977.

Functionally, the increments of the first-year program are described as:

Management: To provide the effort necessary to continue Forest Service leadership in FIRESCOPE and implement the Program. A significant part of this job will be to detail and quantify future year activities. (Budgeted at $130,000.)

Planning, Integration, and Evaluation (PI&E): To develop alternative total system approaches and their ability to meet the Program Mission. Specific tasks include preliminary OCC site location surveys, layouts and plans, economic evaluations of system elements, hardware evaluations, and integration studies of communications and computer systems. (Budgeted at $600,000.)

Training & Operation: To continue the operation of the interim OCC, and pursue additional training of agency personnel in ICS and MACS. The production of unique training aids and guides and the enhancement of multi-agency training procedures will be accomplished. These are specifically limited to those items and functions which exceed the legal or fiscal abilities of individual partners to produce, or to those which must be generated by a single source to obtain uniformity of results. (Budgeted at $180,000.)

Fire Management Information Systems: Will include the continuation of improvements in incident information such as fire spread and initial attack assessment models and activation of some resources status-keeping (RESTAT) capability. The orthophoto mapping will continue within the Core Area, providing additional evaluation of the common mapping objective. Fuels data base work will be commenced and integrated with the progress of fire modelling efforts. (Budgeted at $290,000.)

Second Year: Second-year efforts will continue all aspects of the first-year plan, subject to decisions resulting from completed studies. Remaining PI&E tasks will be finished and the level of activity in training and operation, incident information systems and data base acquisition will increase. Tasks necessary to begin acquisition of communications hardware, a meteorological network, and preliminary computer systems will be undertaken.

Third and Fourth Years: Progress of implementation efforts beyond the second year will be contingent upon the outputs and decisions obtained up to that time. Economic studies, integration and evaluation analyses, and the final research designs will influence the content, timing, and costs for future increments. Partner abilities and desires will also guide future steps which will affect operational and maintenance costs.

The elements and cost figures in this plan for years three and four assume a relatively smooth progress toward a final system configuration which will comply with the original Program Mission.

FUNDING SUMMARY

Financial support for the FIRESCOPE implementation phase will be derived from Federal, State and local sources. A summary of the funds estimated to implement FIRESCOPE in Southern California is shown in Table 2. Full implementation is budgeted at $16.2 million of dedicated Federal FIRESCOPE dollars with additional ongoing support required from Region 5, Forest Service, Fire Research and the State and local agencies.

ECONOMICS DISCUSSION

As stated in the Introduction, 1970 was a disastrous year for fires in the overall FIRESCOPE region, with damage and firefighting costs aggregating multi-millions of dollars, not even considering loss of life. The annual cost-plus-loss of wildland fires in Southern California is estimated conservatively to be approximately $43 million. Values of this magnitude indicate significant potential savings if fire suppression efforts can be improved. One early study showed high benefits ($60 - 80 million savings over 15 years) to be gained by implementing a system similar to FIRESCOPE.

At this time, additional investment in FIRESCOPE is supported by the nearly unanimous opinions of experienced fire managers, and their continued willingness to support the Program. The improvements in communications, coordination, and fire intelligence that FIRESCOPE will provide are considered significant. These professional expressions have helped to build the current FIRESCOPE configuration, and have supported the improvements which have accrued during interim implementation.

1. Significantly improved coordination resulting from activation of the interim OCC.

2. Enthusiastic adoption of the common Incident Command System by all major partners.

TABLE 2

Funding Profile - (Thousand Dollars)

CALENDAR YEAR	1977 Oct	1978 Oct	1979 Oct	1980 Oct	1981 Oct
FISCAL YEAR		1978	1979	1980	1981
Federal Contributions					
FIRESCOPE Program		1200	3700	7800	3500
Region 5[1] [2]		125	150	175	175
Research Support[3]		75	75	0	0
State and Local Agencies Contributions[1]		200[4]	320[4]	900	700

[1] Forest Service R-5, State and local contributions are of two types:

a. In-kind contributions which include expenditures for manning and materials used to support FIRESCOPE (e.g., training, coordination meetings, Task Force activities, equipment, etc)

b. Outlays which include expenditures for direct support (e.g., share of OCC equipment rentals, costs of training aids, etc)

[2] Includes training, operation and maintenance expenses. Does not include the Region 5 National Forest communications and related facilities costs to interact with FIRESCOPE.

[3] PSW-RWU 2110 will continue ongoing research in fire management systems. $75 thousand will be allocated for support to FIRESCOPE.

[4] These values derived from FY 1975-76 estimated expenditures.

3. The success and acceptance of the rudimentary fire spread model.

Thus, actual experience, investment, progress, and realistic expectations justify continuation of implementation efforts through the planning, integration and evaluation year. Economic evaluations produced during that year will address specific implementation options viable at that time and therefore future funding of any selected option will be supported by detailed analyses.

Some of the system options which must be defined by the partners early during the first year are illustrated in the following section.

IMPLEMENTATION OPTIONS

The implementation phase described in this document is based upon current understanding of the "full and complete" FIRESCOPE design as it will be defined in performance specifications at the completion of the R&D phase in Autumn 1977. A myriad of system options are available for operational implementation which range in sophistication from "go with what now exists" to the "full and complete" system.

The work to be accomplished will be strongly affected by decisions made on the system option finally selected during the PI&E year. The major cost areas which would be affected are the MACS as it pertains to the OCC design and the Communications and Computer Systems.

As an example, the OCC can be retained as now configured, it can be expanded and moved to a leased or newly constructed building or some intermediate level could be implemented. In communication, options range from using present capabilities to implementing a new modified capability or again going to the "full and complete" design. In the Computer Systems area the options range from using the equipment and procedures which now exist at the OCC to implementing selected modules or alternatives or the "full and complete" system. Naturally, many combinations of hardware options also could be implemented.

Other decisions which are required concern dedicated vs non-dedicated hardware, lease or purchase arrangements, etc. The study of the optimum path to pursue is one of the main objectives of the first-year program.

PLAN SUMMARY

A summary schedule of the proposed FIRESCOPE implementation is shown in Figure 3. Eleven specific elements are used to describe the

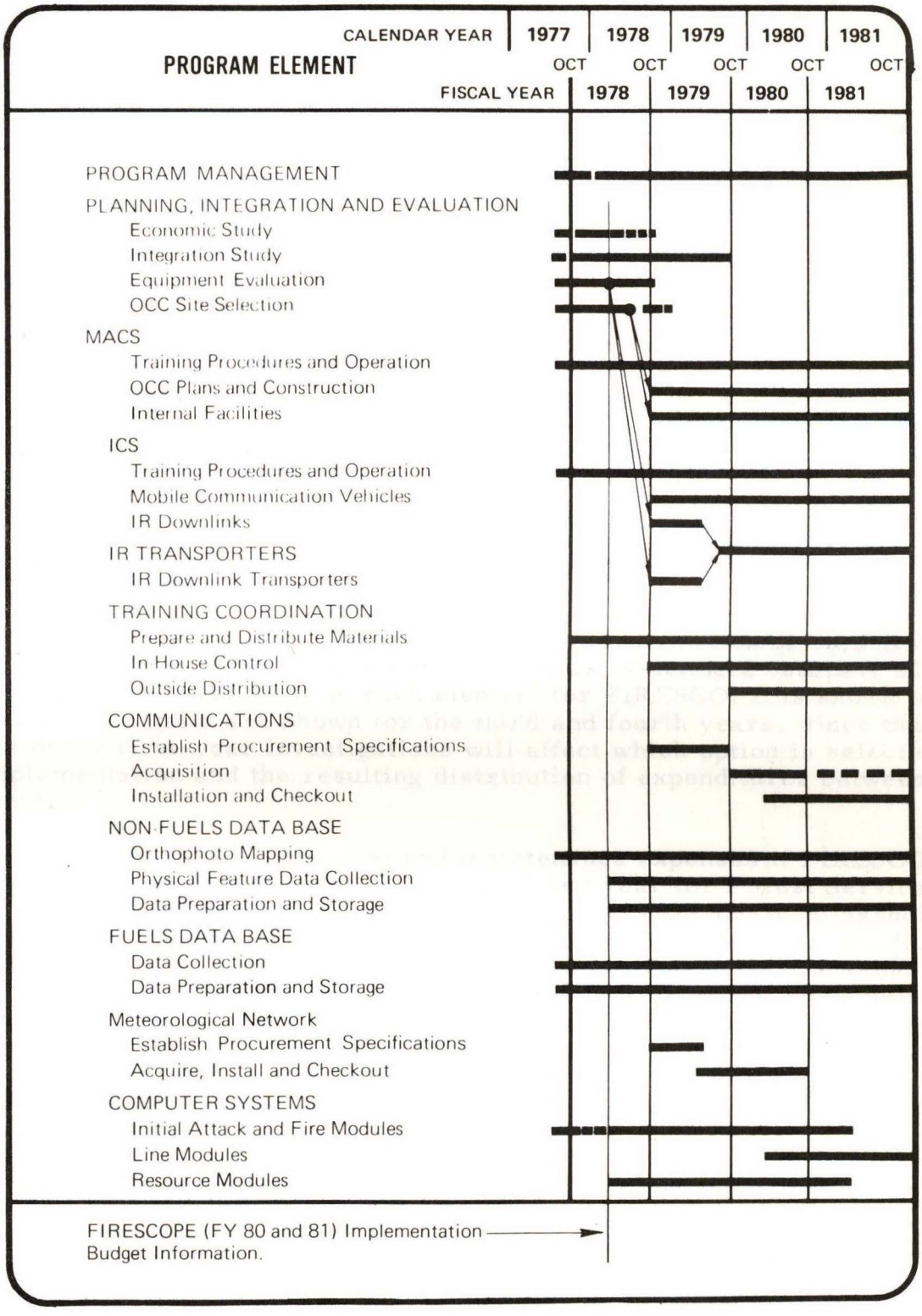


Figure 3. - FIRESCOPE Implementation Summary Schedule

Program. Each of these elements constitutes a specific set of pursuits directed toward achievement of the Program Mission. The Program Elements are closely interrelated, and full implementation of FIRESCOPE in Southern California requires completion of all activities within each element.

Preliminary milestones have been established and more specific milestones must be established within each element during the first year to assure that information required from one element will be available in sufficient time for actions scheduled in a related element. For example, as part of the equipment evaluation, current planning calls for evaluation of an infrared (IR) downlink in conjunction with OCC operations during the early part of Fiscal Year 1978. Information from this evaluation must be available in time for decisions on acquisition of additional communications links and IR transporters in the following years. Similarly, information which will support budgetary submittals and decision processes (i.e., economic analysis) will be expected to be available for preliminary Forest Service budget estimates in March 1978.

The funding estimates are based upon implementation of the full capability of FIRESCOPE in Southern California. A detailed estimate of the expenditures attributable to each element for FIRESCOPE is shown in Figure 4. No details are shown for the third and fourth years, since the results of the first-year investigations will affect which option is selected for implementation and the resulting distribution of expenditures between elements.

The estimate for operation and maintenance expenses if FIRESCOPE is fully implemented is $160 - $175 thousand per year for Forest Service Region 5 and $700 - $800 thousand per year for the State and local agencies involved. Full implementation is not a commitment at this time. As during the four-year implementation phase, this support will consist of in-kind contributions for continued training, manning the OCC, coordination requirements, equipment maintenance and replacement, and some direct cash outlay required primarily to support the integrated operation of the OCC.

ELEMENT DESCRIPTIONS

A further breakdown of the implementation phase by major elements is shown in the following charts. Each element is keyed to one or more of the FIRESCOPE Program Components. Also shown is the budget detail of the FIRESCOPE line item for the first two implementation years.

Element \ Fiscal Year	1978				1979			
	FIRESCOPE	State and Local Agencies	Region 5	Fire Research	FIRESCOPE	State and Local Agencies	Region 5	Fire Research
Program Management	130				200			
Planning, Integration, and Evaluation, PI&E	600			75	300			75
MACS	50	40	35		400	45	40	
ICS	90	90	75		600	100	80	
IR Transporters		20			100	50		
Training Coordination	40	10	5		100	45	10	
Communications					250	20	10	
Non-Fuels Data Base	200	20			300	25		
Fuels Data Base	50	20	10		50	35	10	
Meteorological Network					400			
Computer Systems	40				1000			
Totals	1200	200	125	75	3700	320	150	75

Figure 4. - Projected Funding Requirements - First Two Years
(Thousand Dollars)

Program Element: Program Management

Goal: To provide the staffing, travel, overhead and other expenses required to manage the integration and implementation of FIRESCOPE.

Objectives:

1) To staff the FIRESCOPE Program Office

2) To provide the means for the detailed planning and direction of FIRESCOPE implementation

Management Information: Included in this element are the costs and effort necessary for the function of the Program Office staff. This staff will consist of the Program Manager and one assistant during the first year and the Program Manager and two assistants through FY 1979 -81. A significant workload is anticipated for preparation of Requests for Proposals (RFP's). Other responsibilities of the Program Office include:

- Program planning, integration and coordination
- Program resource monitoring and control
- Program evaluations
- Status and assessment reporting
- Problem analysis, project definitions
- Contractor evaluation and surveillance
- Program activity schedules
- Preparation and presentation of briefings

The Program Management element supports achievement of all Program Components.

Financial Information: All funds required to support this element will be provided by FIRESCOPE through the duration of implementation. Schedule and FIRESCOPE funding information is shown in Figure 5.

CALENDAR YEAR	1977	1978	1979	1980	1981
ITEM	OCT	OCT	OCT	OCT	OCT
FISCAL YEAR		**1978**	**1979**	**1980**	**1981**
PROGRAM MANAGEMENT					
Provides all Program Office functions as required through FY 1981					
FUNDING TOTALS, $(Thousands)		130	200		

GOAL

To provide the staffing, travel, overhead and other expenses required to manage the integration and implementation of FIRESCOPE.

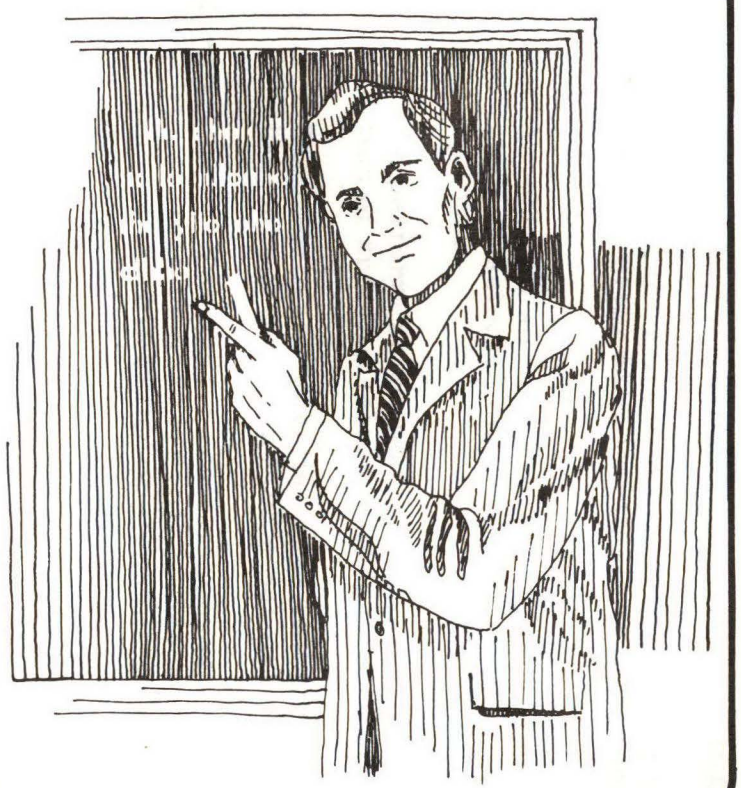


Figure 5. - Schedule and FIRESCOPE Funding - Program Management

Program Element: Planning, Integration and Evaluation (PI&E)

Goal: To provide information for Forest Service, State, and local agency management decisions prior to commitment of major implementation expenditures.

Objectives:

1) To conduct an integration study and field evaluation of selected components of FIRESCOPE options.

2) To perform an economic analysis for implementation of specific selected integrated system options.

3) To investigate potential sites and prepare preliminary layout plans for a permanent OCC.

Management Information: To support achievement of all five Program Components, a significant first-year effort will be devoted toward planning, integration and evaluation of the FIRESCOPE elements as they emerge from the R&D Program. Specifically the integration study and field evaluation will:

- Define system options
- Assess system options ability to meet Program Mission requirements
- Develop implementation schedule and costs for system options
- Evaluate performance of specific hardware component in conjunction with OCC and ICS operations
- Provide opportunity for partner consensus on final configuration

The economic evaluations will provide a quantified assessment of benefits to be achieved through implementation of selected system options. These options will depict selected levels of FIRESCOPE capability. The economic evaluations will provide system planners and policy makers with information to decide which level of system capability should actually be implemented. The assessments will be one of the high-priority elements of the implementation phase and will have to start immediately in the first year. This will require the Program Office to establish cost criteria and also to define the selected capability levels of system options, before September 30, 1977. Since a major expenditure for a permanent OCC location may be required in the third or fourth year of implementation, it is necessary to conduct an early site location survey and prepare layout drawings for use by policy decision makers to select the actual site. Specifically, this task requires:

- o Development of location criteria and requirements
- o Development of facility criteria and requirements
- o Preparation of candidate site locations
- o Preparation of facility layouts
- o Site surveys
- o Preparation of candidate sites and facilities "pros and cons"

Financial Information: All funds required to support this element will be provided by FIRESCOPE and Fire Research through the duration of the element. Schedule and FIRESCOPE funding information is shown in Figure 6.

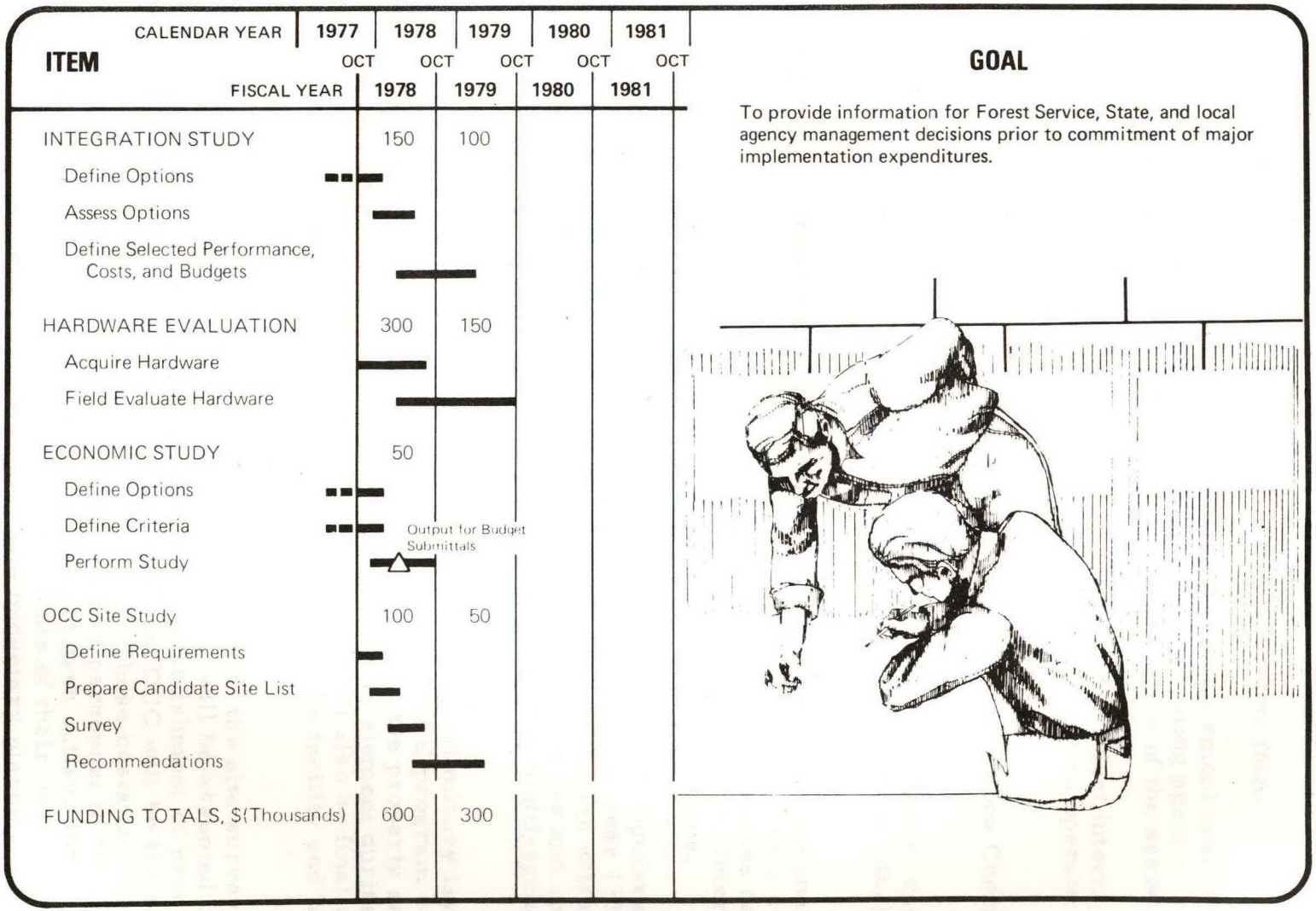


Figure 6. - Schedule and FIRESCOPE Funding - Planning, Integration and Evaluation (PI & E)

Program Element: Multi-agency Coordination System (MACS)

Goal: To provide FIRESCOPE with the "managerial" element needed for integrating the day-to-day operations of the participating agencies and for providing operational continuity throughout the life of the system.

Objectives:

1) To formulate procedures and conduct internal training necessary to implement and operate the MACS.

2) To provide a facility for the Operations Coordination Center.

3) To acquire internal facilities (telephones, radios, terminals, furniture, status materials, etc.) for the OCC.

Management Information: This element satisfies Program Component, "to coordinate regional resources during major incidents." As a central operational management element of FIRESCOPE, MACS includes data collection and processing, coordination of public information, internal training programs, and preplanning assistance to fire services.

During the first-year activity this element supports operation of the interim OCC at approximately the same level as fiscal year 1977. In the subsequent years the Forest Service and partner agencies will continue training, development of MACS operational procedures and operation of the interim and later the permanent OCC and ongoing multi-agency management system.

Also during the first year, site surveys and preliminary layouts of the permanent OCC will be completed under the PI&E program element. After the actual OCC site is selected final survey of the property and architects plans for the OCC will be completed under this element during the second year. Planning for the internal facilities will also be finalized. The third and fourth years include construction of the facility and installation of acquired internal components.

Financial Information: Major costs associated with the site surveys, plans, construction and equipping of the permanent OCC will be assumed by FIRESCOPE. Costs associated with the training, establishment of procedures and operation of both the interim and permanent OCC will be the responsibility of each agency (including R-5) involved. These costs include those associated with manning of the OCC, training of personnel in MACS procedures, OCC-ICS integration and some direct cash outlays for items such as computer rentals, telephone costs, and costs of their own business needs. The State of California OES will coordinate budgetary planning and assume a major share of normal maintenance expenses (Appendix C). Schedule and FIRESCOPE funding information is shown in Figure 7.

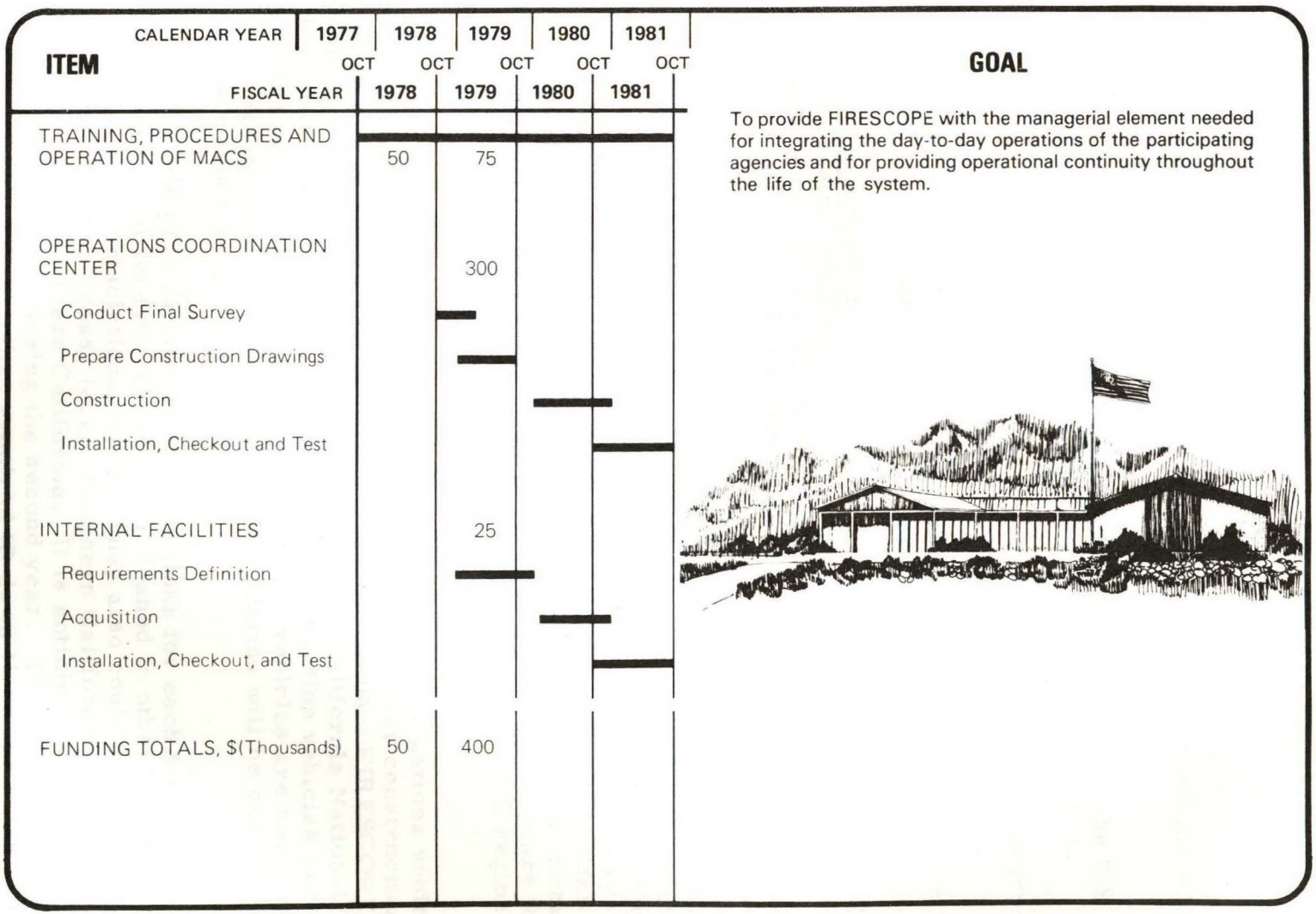


Figure 7. - Schedule and FIRESCOPE Funding - Multi-Agency Coordination System (MACS)

Program Element: Incident Command System (ICS)

Goal: To implement the Incident Command System for on-site management of partner agency resources during emergencies within the FIRESCOPE region.

Objectives:

1) To provide partner agency training in the ICS, standard terminology, and field operation.

2) To provide key mobile communication equipment for interagency coordination.

3) To provide electronic equipment for fire line intelligence.

Management Information: This element implements the Program Component "to develop standard terminology and incident organization structure" and to some degree fulfills the Component "to provide multi-agency training in systems developed under FIRESCOPE." ICS, the field operational part of FIRESCOPE, provides for on-site management of resources during incidents through use of standard terminology and organizational structure. It is the organization that handles the emergency situation. Included in this element is full field training over the entire FIRESCOPE region for all the current and future partner agencies. This training will allow an operational test and necessary modifications of the ICS system in the Core Area during the next several fire seasons. The first year of implementation will continue ICS partner agency training in field operation at approximately the same level as FY 77. During subsequent years the training activity will be expanded into the entire FIRESCOPE region by all partner agencies.

The system design also calls for local communications vehicles. One of these is operational now, three others are under construction by partners and two more exist but require modification. FIRESCOPE will provide one additional vehicle on each Southern California National Forest. At least two of these additional mobile communication vehicles are required during the second year. Subsequent additional vehicles are now planned for in the program schedule, but their implementation will be subject to decisions made from the PI&E studies.

FIRESCOPE will provide IR down links for each Southern California National forest. These can be loaned to other partners and/or be used on multi-jurisdictional fires. They also could be exported to other Forest Service areas, (e.g., Northern California, Region 3, etc.) when not in use in Southern California. It is anticipated that two IR down links will be purchased during the second year. The third and fourth years will see purchase of any other required IR down links and integration of these units into the FIRESCOPE operation. The transport vehicles for the IR equipment are discussed under the IR Systems Transporters program element.

Also included herein are the estimated costs to cover the telephone costs and radios necessary to provide interagency coordination on multi-agency incidents. These hardware items are assumed to be part of each agency's communications plans but may require specific modification or configurational changes to meet FIRESCOPE needs.

Financial Information: The costs associated with the training and operation of the ICS will be assumed by each partner agency as required to support FIRESCOPE. The costs of modifying existing communications vehicles or constructing new ones to meet FIRESCOPE requirements include four vehicles to be supplied by FIRESCOPE and five by the other partner agencies. Most of these costs will be incurred during the third and fourth year of implementation and will be assumed by the agencies acquiring the communications vehicles. All costs associated with purchase and installation of the IR down links into the IR transporters will be the responsibility of FIRESCOPE. Schedule and FIRESCOPE funding information is shown in Figure 8.

ITEM	CALENDAR YEAR 1977	1978	1979	1980	1981
	OCT	OCT	OCT	OCT	OCT
	FISCAL YEAR 1978	1979	1980	1981	
TRAINING, PROCEDURES, AND FIELD OPERATION OF ICS	90	100			
MOBILE COMMUNICATION VEHICLES					
Specification and Initial Purchase		250			
Final Purchase and Checkout					
INFRARED DOWN LINKS					
Specifications and Acquisition		250			
Installation, Checkout and Test					
FUNDING TOTALS, $(Thousands)	90	600			

GOAL

To implement the Incident Command System (ICS) for on-site management of partner agency resources during emergencies within the FIRESCOPE region.

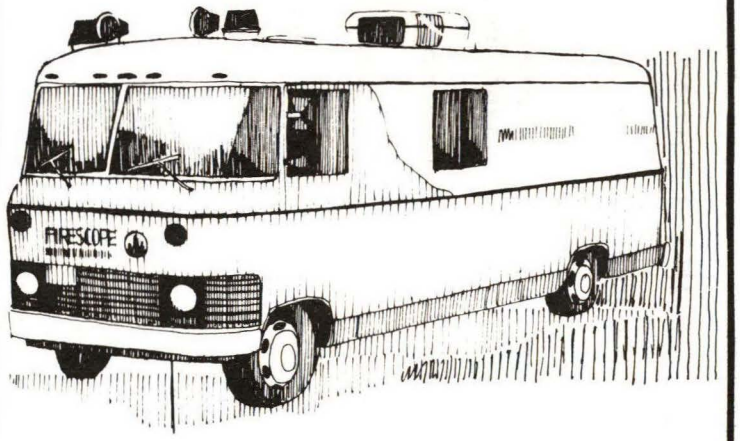


Figure 8. - Schedule and FIRESCOPE Funding - Incident Command System (ICS)

Program Element: Infrared Sub-Systems Transporters

Goal: To provide the necessary sub-system components for mounting and transporting IR ground links.

Objectives:

1) Complete definition of hardware required to mount the IR down links.

2) Prepare procurement specifications.

3) Acquire, install and checkout assemblies.

4) Develop and sign-off co-op agreements.

Management Information: This element contributes to Program Component "to develop improved methods for status keeping and forecasting fire behavior." The effort included herein is that required for procurement of the necessary transportation equipment to accommodate 5 IR down links. The acquisition of the ground links and transporters is subject to the results of first year PI&E element. Also included in this element is the effort required to integrate the use of the Los Angeles County Forward Looking Infrared (FLIR) unit into FIRESCOPE Core Area operations.

Financial Information: The movable/transportable IR assemblies will be purchased by FIRESCOPE. Purchase of the IR downlink assemblies will take place during the last three years of implementation. The partner State and local contributions in the first year would be the costs which will be incurred by the Los Angeles County Fire Department for use of the FLIR helicopter as support to FIRESCOPE operations. Schedule and FIRESCOPE funding information is shown in Figure 9.

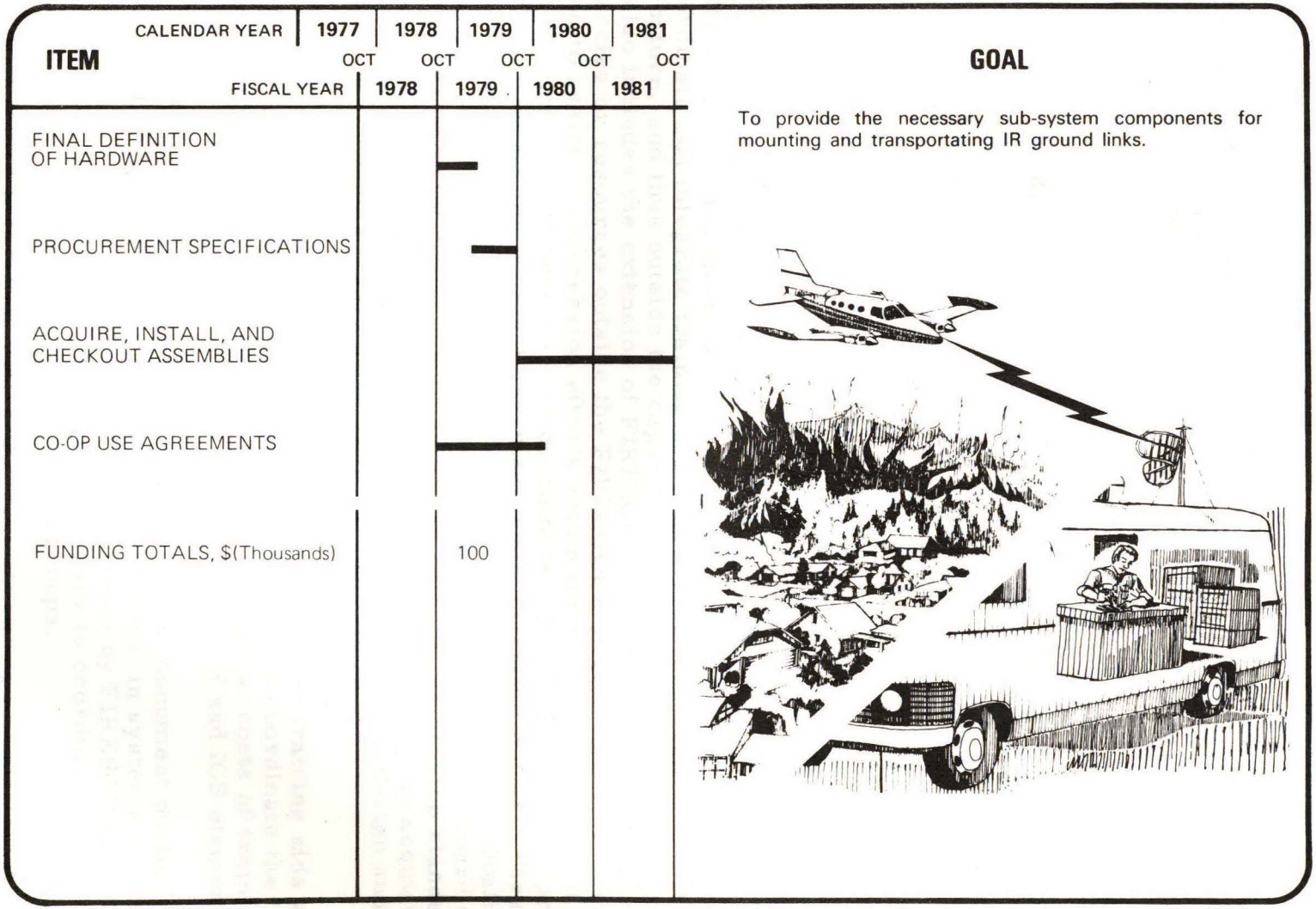


Figure 9. - Schedule and FIRESCOPE Funding - Infrared Sub-Systems Transporters

Program Element: Training Coordination

Goal: To provide the training aids and support necessary to complete training in all aspects of the implemented FIRESCOPE design, and to coordinate and integrate all training efforts with external organizations.

Objectives:

1) Identify and complete those training processes which cannot legally be accomplished by individual partners.

2) To coordinate FIRESCOPE training with external State and National organizations.

3) To complete all training guides and materials and conduct evaluation training on all FIRESCOPE design elements completed after March 15, 1977.

4) To extend FIRESCOPE training to necessary forces beyond the FIRESCOPE region.

Management Information: This program element partly fulfills Program Component "to provide multi-agency training in systems developed under FIRESCOPE." It includes all labor, costs and functions necessary to coordinate and integrate training aids and materials which are multi-agency in nature, and thus outside the capabilities of individual partners to produce. It also includes the extension of FIRESCOPE training and orientation to agencies or resources outside the FIRESCOPE region who may be called upon to assist in suppression efforts within the region. Further, it includes the extensive effort necessary to coordinate FIRESCOPE training procedures with State-wide and National organizations such as the National Fire Prevention and Control Administration, National Interagency Fire Qualification System, National Wildfire Coordinating Group, and the State Board of Fire Services. Finally, it includes the efforts required to develop standard training in final OCC operations, communications, data base acquisition, computer systems, and other specifics according to final design and implementation decisions.

Production and control of unique multi-agency training aids and materials and the efforts necessary to integrate and coordinate the "external" processes are a Program responsibility. The actual costs of training personnel within FIRESCOPE are included in the MACS and ICS elements.

Financial Information: The costs of preparation, document publication, and initial training (including validation exercises) in systems not yet completed by Forest Service Research will be borne by FIRESCOPE. This is also true for those costs and efforts necessary to coordinate FIRESCOPE training with National and other external groups.

Partners (including R-5) will assume all costs associated with document publication and control for training processes now completed. Scheduleand FIRESCOPE funding information is shown in Figure 10.

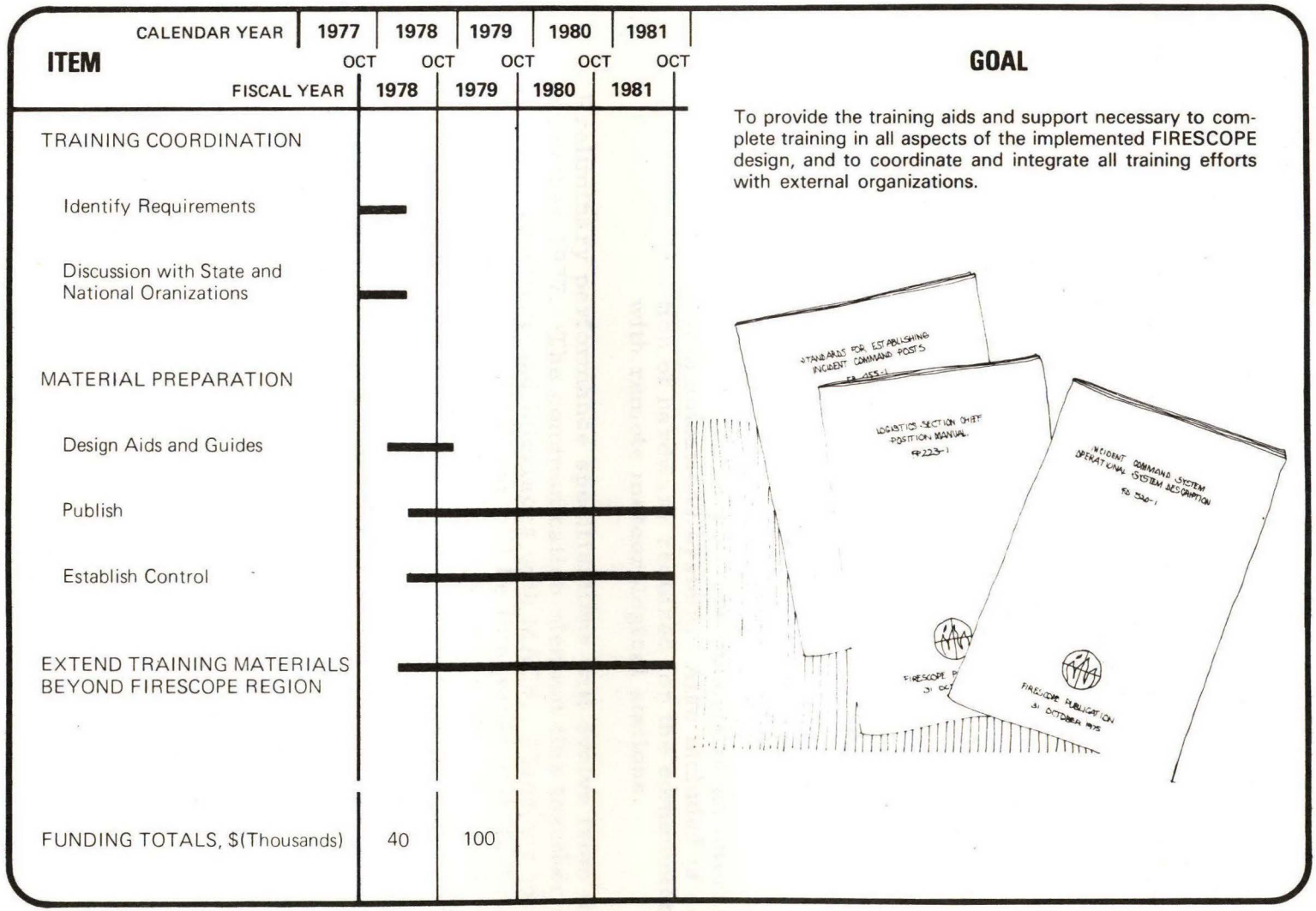


Figure 10. - Schedule and FIRESCOPE Funding - Training Coordination

Program Element: Communications

Goal: To provide the FIRESCOPE partners with the communications hardware necessary to operate the ICS and integrate the ICS and MACS.

Objectives:

1) Prepare procurement specifications for system hardware (repeaters, earth stations, weather data communication, etc.) to integrate ICS and MACS.

2) Acquire system hardware.

3) Distribute, checkout and test equipment.

Management Information: This element satisfies the Program Component "to provide multi-agency communications." Included in this element are the functions and costs required to:

- o Develop specifications
- o Acquire components
- o Install and checkout components of an interagency communications system. Also included is acquisition of hardware required for the communication with remote meteorological stations.

Preliminary performance specifications will evolve from the R&D phase in October 1977. The communication element ties together agencies performing ICS functions and interfaces with MACS. Plans for implementation of the communication equipment will be integrated with each agency communication plan. Integration will be studied under the PI&E task during the first year. Once this has been accomplished the next step is the preparation of hardware procurement specifications during the second year. The third year will include the actual acquisition and implementation of the hardware. Final checkout and full operational use of the hardware will occur during the fourth year.

Financial Information: Each partner is expected to assume the costs involved in procurement of agency-owned communications equipment to meet FIRESCOPE performance requirements and used within their jurisdiction. FIRESCOPE will be responsible for acquiring integrating hardware. Included in this element are the costs for all hardware required for communication of remote meteorological stations to a central receiver. Schedule and FIRESCOPE funding for this element are shown in Figure 11.

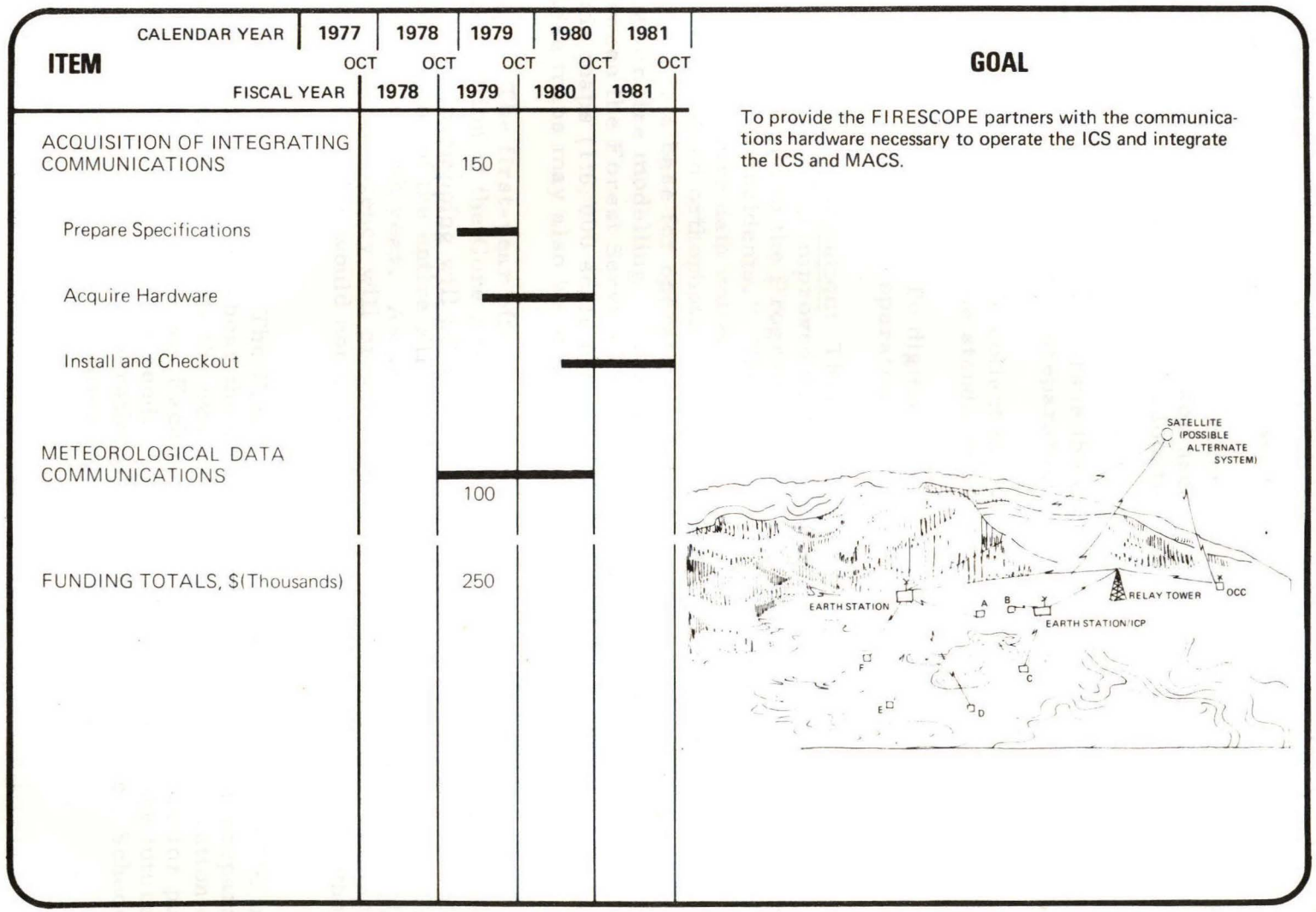


Figure 11. - Schedule and FIRESCOPE Funding - Communications

Program Element: Non-Fuels Data Base

Goal: To provide an acceptable common map system for all agencies within the FIRESCOPE region for use as basic topographic and management data in fire modelling and location identification during incident operations.

Objectives:

1) To pursue the cooperative agreement with USGS for preparation of orthophoto maps.

2) To collect physical feature data for inclusion on the standardized maps.

3) To digitize and prepare map data for storage and operational use.

Management Information: This element is applicable to the Program Component "to develop improved methods for status keeping and forecasting fire behavior," and to the Program Component "to coordinate regional resources during major incidents." The element includes costs for topographic and physical feature data collection, data digitizing and preparation for storage. A standardized orthophoto map system will be prepared to provide a consistent data base for operations of the partner agencies and topographic data for fire modelling. Present planning calls for a cooperative effort between the Forest Service and the USGS with the USGS preparing 1:24, 000 scale maps (1:6, 000 scale for special areas) of the FIRESCOPE region. These maps may also be of use to land use planners.

The first-year effort will continue and complete orthophoto map preparation of the Core Area. During the second and succeeding years the orthophoto mapping will be moved out into the entire FIRESCOPE region. Completion of the entire FIRESCOPE region would take place during the third and fourth year. As part of the first year and ongoing year efforts each partner agency will provide topographic information to be placed on these maps which would not normally be put there through the orthophoto process.

Financial Information: The U. S. Forest Service and FIRESCOPE in cooperation with the USGS will bear the costs of the orthophoto map preparation. All partners will assume the expense for gathering and integration of physical feature data into the maps. Each partner will be responsible for purchase of maps required for their need. Updating of the maps in the future will be part of ongoing program operational and maintenance costs. Schedule and FIRESCOPE funding information is shown in Figure 12.

CALENDAR YEAR	1977	1978	1979	1980	1981
ITEM	OCT	OCT	OCT	OCT	OCT
FISCAL YEAR		**1978**	**1979**	**1980**	**1981**
ORTHOPHOTO MAP PREPARATION		175	250		
Agreement with USGS					
Map Preparation					
Physical Feature Additions					
DIGITIZE MAPS FOR STORAGE AND RETRIEVAL		25	50		
FUNDING TOTALS, $(Thousands)		200	300		

GOAL

To provide an acceptable common map system for all agencies within the FIRESCOPE region for use as basic topographic and management data in fire modelling and location identification during incident operations.

Figure 12. - Schedule and FIRESCOPE Funding - Non-Fuels Data Base

Program Element: Fuels Data Base

Goal: To collect and process data on wildland fuel type, density and age for the FIRESCOPE region for use in fire modelling.

Objectives:

1) To collect data needed for fire spread prediction and initial attack assessment.

2) To format, digitize and prepare data for storage and retrieval for use in fire models.

Management Information: This element relates to the Program Component, "to develop improved methods for status keeping and forecasting fire behavior." It includes the efforts and costs necessary to conduct surveys for classification and inventory of fuels within the FIRESCOPE region and the integration of the collected data into an acceptable format for fire perimeter prediction and fire status modelling. The data collected under this element applies to the FIRESCOPE region only.

Financial Information: Each agency will be contribute to the costs of initial collection of fuel-type data. The costs of formatting, digitizing and preparing the data for storage will be assumed by FIRESCOPE. Updating of the fuels data base in future years will be part of the systems operational and maintenance expenses assumed by all partners. Schedule and FIRESCOPE funding information is shown in Figure 13.

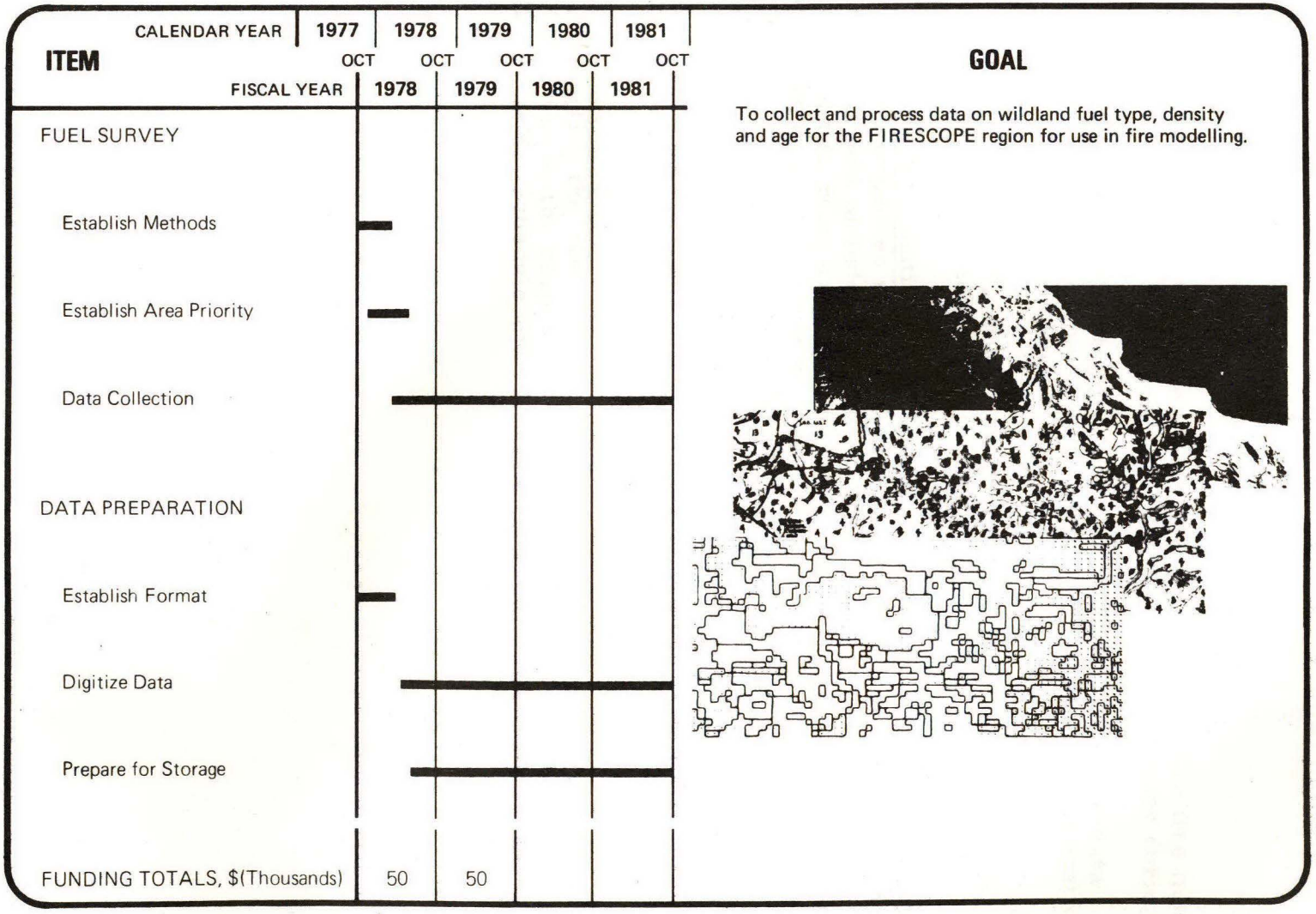


Figure 13. - Schedule and FIRESCOPE Funding - Fuels Data Base

Program Element: Meteorological Network

Goal: To provide meteorological information for real-time fire modelling, fire danger rating predictions and to the Incident Commander during incidents.

Objectives:

1) To integrate appropriate meteorological data communication hardware with the remote stations and receiver.

2) To implement a remote station meteorological network within the FIRESCOPE region.

Management Information: This element relates to Program Component, "to develop improved methods for status keeping and forecasting fire behavior". This effort will include site selection, purchase and installation of remote automatic recording-transmitting meteorological stations. The communications equipment reuqired to transmit information from the remote stations to a receiving station is included in the Communications Program Element. The first year of this program has no activity projected, however, some stations may be acquired and installed as part of the PI&E integration and evaluation study task; the second year will begin the acquisition for the full complement of remote stations.

Financial Information: FIRESCOPE is responsible for all costs involved in implementing the basic meteorological data network. Operation and maintenance will be the responsiblility of those agencies participating in the FIRESCOPE. Schedule and FIRESCOPE funding information is shown in Figure 14.

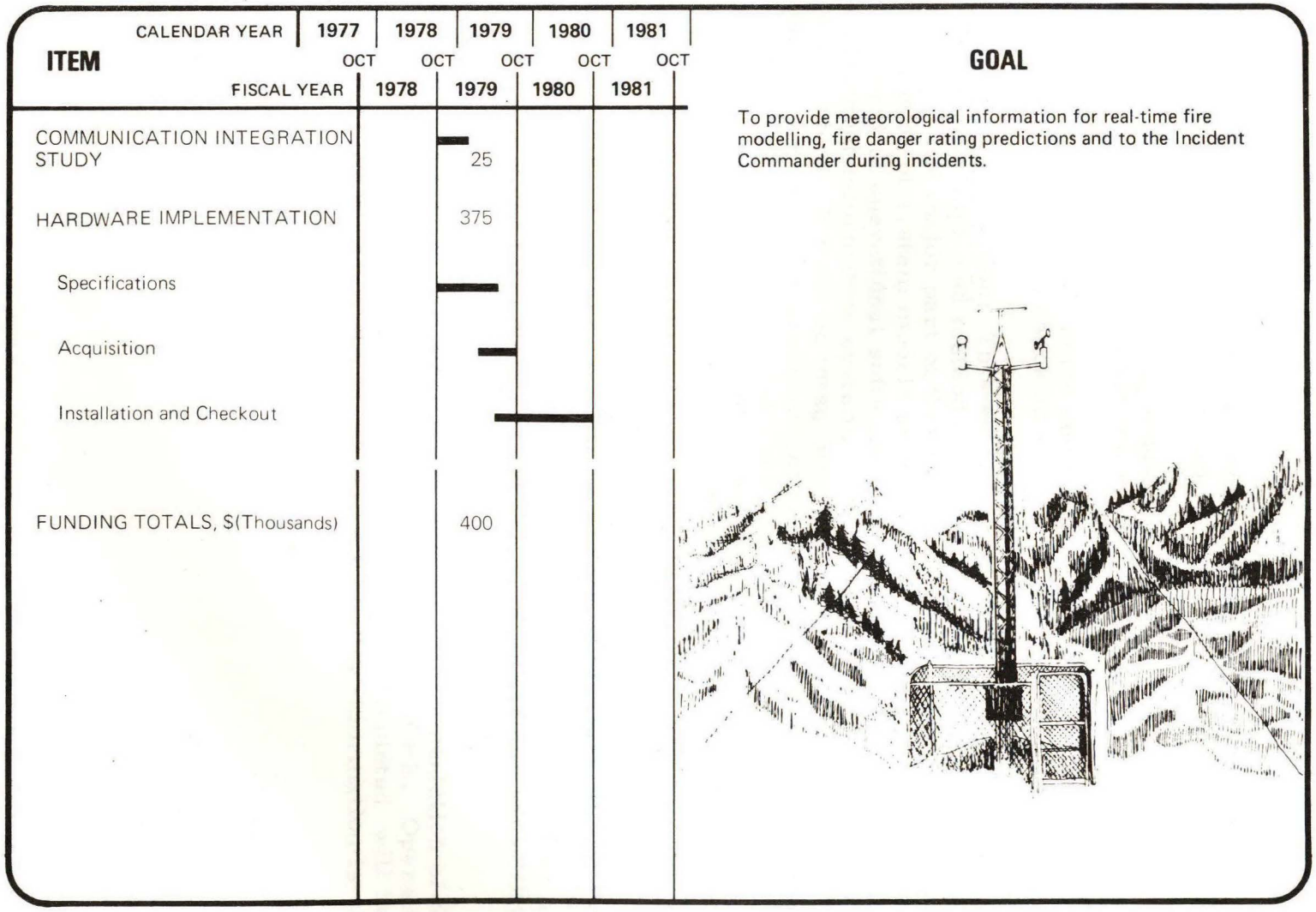


Figure 14. - Schedule and FIRESCOPE Funding - Meteorological Network

Program Element: Computer Systems

Goal: To implement and validate a computerized incident information system within the FIRESCOPE region.

Objectives:

1) To develop system models and the associated operational software required for computer operation.

2) To acquire and install computer facility hardware and checkout its operation.

Management Information: This element contributes to the Program Component "to develop improved methods for status keeping and forecasting fire behavior". The major part of this element is concerned with development and validation of system models and procurement of computer hardware. Development of operational software is required for all computer models of the incident information system. Development of operational software is not independent. It must be integrated with hardware acquisition. Specifications are required for procurement of data entry, processing, storage and display hardware. The first-year program is minimal and currently only foresees some improvement in the Fire Spread Model through incorporation of initial attack assessment capability at the interim OCC. Some resource status keeping models will be activated and begin to function in OCC operations.

To achieve the total capability FIRESCOPE will require installation and checkout of all models by the end of the fourth year. These computer assisted functions would give FIRESCOPE complete automated fire modelling, line building, cost assessment and resource status keeping capability at the OCC.

Financial Information: All costs associated with implementation of the computer systems will be the responsibility of FIRESCOPE. Operation and maintenance of the system after installation is completed will be the responsibility of all partners. Schedule and funding information is shown in Figure 15.

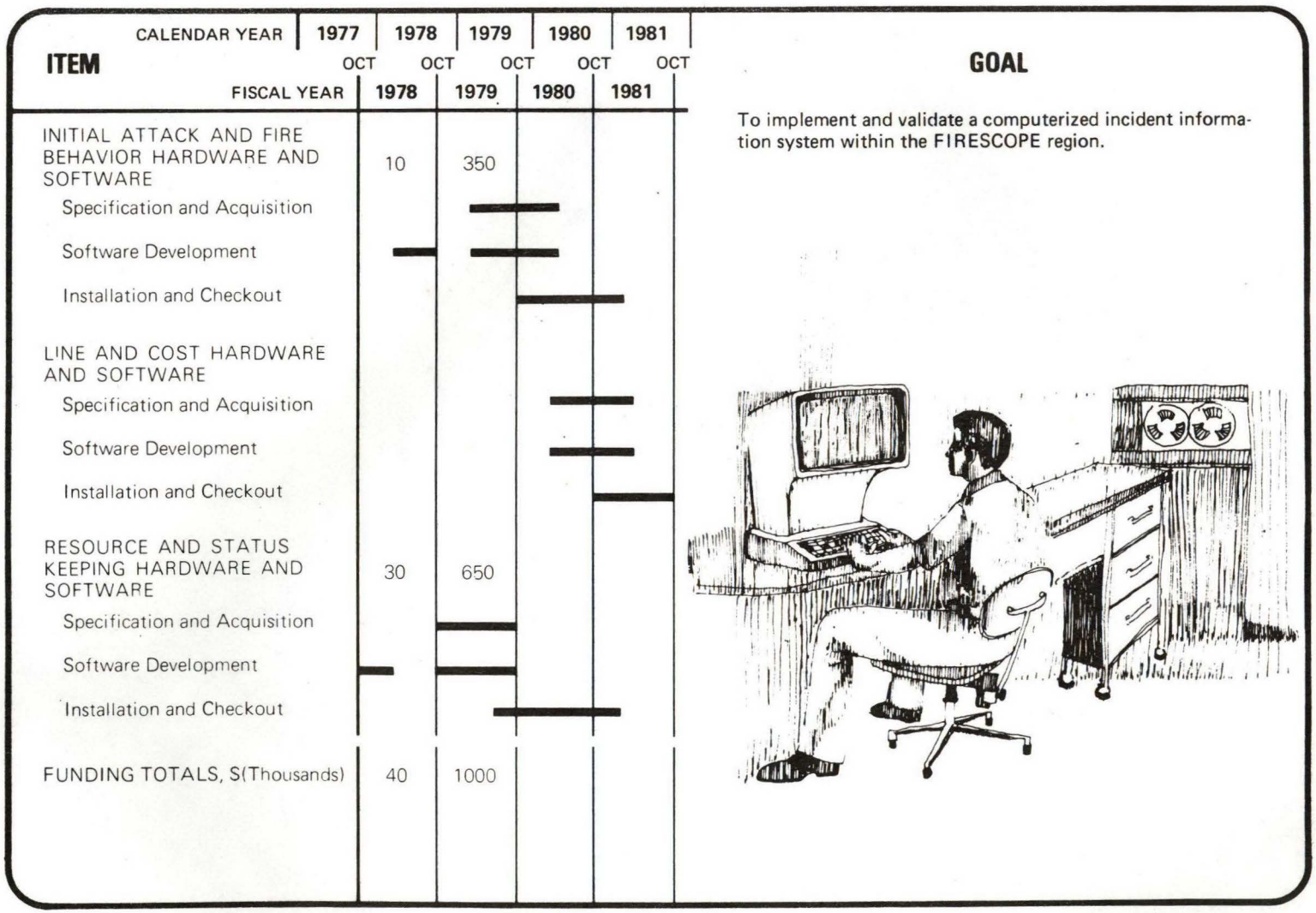


Figure 15. - Schedule and FIRESCOPE Funding - Computer Systems

APPENDICES

APPENDIX A

Letters of Support

FILE COPY

city of montebello

FIRE DEPARTMENT
ROBERT E. METZ
FIRE CHIEF

FIRESCOPE

600 NORTH MONTEBELLO BLVD
(POST OFFICE BOX 104)
MONTEBELLO, CALIF. 90640
(213) 722-7804 • 722-4100

December 1, 1976

Mr. Bob Irwin
Firescope Program Director
Riverside Fire Lab
4955 Canyon Crest Drive
Riverside, California 92507

Dear Bob:

I want to thank you again for answering my request to present a program on FIRESCOPE at the combined Areas "C", "D" and "E" Meeting held in Downey.

The Chiefs of the 26 Agencies are very interested in this program and feel it is of vital importance to our wildland firefighting capabilities.

As Coordinator of the Area "E" (Southeast Cities of Downey, Santa Fe Springs, Lynwood, Compton, Vernon and Montebello) I wish to go on record, that the FIRESCOPE Program has our full support.

During the past few years of program development, we have kept abreast of the advancement in technology and are impressed.

In your presentation, you informed us that the implementation of the program is contingent on funding.

The Area "E" Chiefs feel this system (FIRESCOPE) would be indispensable and if we can assist you in anyway in acquiring the necessary funding, do not hesitate to call upon us.

Sincerely,

Robert E. Metz

Robert E. Metz
Area "E" Coordinator

REM/cab

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DIXON ARNETT
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California Legislature

Assembly Select Committee on Fire Services

WILLIAM CAMPBELL
CHAIRMAN
13

ROOM 35
1116 9TH STREET
SACRAMENTO, CA 95814
TELEPHONE: (916) 445-1551

STAFF:
JERRY M. HALEVA
SENIOR CONSULTANT
ROBIN "GEORGE" SPRINGER
ASSISTANT CONSULTANT
GALE FAIRBROTHER
SECRETARY

FILE COPY
FIRESCOPE

November 4, 1976

Mr. Robert Irwin
FIRESCOPE
Riverside Fire Laboratory
4955 Canyon Crest Drive
Riverside, California 92507

Dear Bob:

I would like to take this opportunity to commend you and your staff on the development and implementation of the FIRESCOPE program. The need for this program in Southern California is so great that its full utilization should be given a top priority by both our Federal and State governments.

As Chairman of the Select Committee on Fire Services, and as the newly-elected Senator to the 33rd Senatorial District, I intend to direct my efforts to ensure the state's fiscal participation in the full implementation and operation of FIRESCOPE. I also hope your office will continue in its efforts to achieve all of the objectives of this desperately needed program.

Again, you deserve high praise and continued encouragement.

Sincerely,

WILLIAM CAMPBELL

WC:nv

CITY OF LOS ANGELES
CALIFORNIA

BOARD OF
FIRE COMMISSIONERS
485-6032

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PRESIDENT
DANA SENIT HENRY
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JOHN G. LAWSON
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TOM BRADLEY
MAYOR

DEPARTMENT OF FIRE
200 NORTH MAIN ST.
LOS ANGELES, CALIF. 90012

KENNETH R. LONG
CHIEF ENGINEER
AND
GENERAL MANAGER

FILE COPY
FIRESCOPE

5100 - Oper Issues

August 31, 1976

Mr. Robert Irwin
U.S. Forest Service
Fire Lab - Riverside
P.O. Box 5007
Riverside, California 92507

FIRESCOPE TERMINOLOGY IMPLEMENTATION

Dear Bob:

Our Department is committed to the implementation of the Incident Command System and FIRESCOPE terminology for our emergency operating procedures.

We have applied the Incident Command System and FIRESCOPE terminology to our high rise emergency operation procedures. We have also initiated the revisions of all our emergency operating procedures using the Incident Command System in various configurations and applying FIRESCOPE terminology. I expect this project to take about six months.

For our operations in the "Core Area", all of our Battalion Commanders will be trained as Strike Team Leaders, and all of our Division Commanders will be trained as Division Supervisors. Our helicopter, tractor, and dispatch personnel will be given a general orientation that defines each of their specific operations within the system. This training should be completed by the end of October, 1976.

In 1977, we will begin general orientation and terminology training for all of our members and hopefully progress through full system training in 1978.

Very truly yours,

Anthony E. Giordano

ANTHONY E. GIORDANO
Acting Chief Engineer and General Manager

AEG:FWB:gp

AN EQUAL EMPLOYMENT OPPORTUNITY — AFFIRMATIVE ACTION EMPLOYER

FILE COPY

FIRESCOPE

STATE OF CALIFORNIA—RESOURCES AGENCY

EDMUND G. BROWN JR., Governor

DEPARTMENT OF CONSERVATION
DIVISION OF FORESTRY
1416 NINTH STREET
SACRAMENTO, CALIFORNIA 95814
(916) 445-9882

FIRE PROTECTION
Firescope

August 27, 1976
F-1/8-27

Mr. Bob Irwin
Firescope Program Manager
Riverside Forest Fire Laboratory
P.O. Box 5007
Riverside, CA 92507

Dear Bob:

In response to our discussion on August 11, the Division of Forestry has taken the following action to introduce Incident Command System terminology to the Division of Forestry field forces.

Our Fire Control Handbook (5600), which is carried in all engines and by all fire officers, contains on page 44 a general description of FIRESCOPE and the Incident Command System, on page 45 an Incident Command System Organization Chart, and on page 46 a Table of Approximate Equivalents between the Incident Command System and the current Division of Forestry Fire Control Organization. Copies of these pages are attached for your information.

In the near future we propose to include in the Fire Control Handbook copies of the information currently included in the "Incident Command System Operation Guide," dated July 1976. We will include items 3 - 10, as we feel 1 and 2 are covered on the afore-mentioned pages. With some luck with the printer that should be included within the next two months.

Sincerely,

Larry E. Richey, State Forester

By M. O. Schori

M. O. Schori, Deputy State Forester

06
Attach.

FILE COPY

FIRESCOPE

county of ventura

FIRE PROTECTION DISTRICT
Camarillo Airport
275 East Pleasant Valley Road
Camarillo, CA 93010
Phone: (805) 484-3601

Providing Fire Protection to the Cities of:

Camarillo,
Ojai,
Port Hueneme,
Simi Valley,
Thousand Oaks,
and
unincorporated
areas of
Ventura County

S. E. MASSON
County Fire Chief
MICHAEL SELLERS
Deputy Fire Chief
DONALD L. ELLIS
Fire Division Chief
RICHARD L. WILSON
Fire Division Chief
RICHARD BROUGHTON
Administrative Officer

August 26, 1976

Mr. Robert Irwin, Program Manager
Project FIRESCOPE
United States Forest Service
Fire Laboratory
P. O. Box 5007
Riverside CA 92507

SUBJECT: FIRESCOPE TERMINOLOGY IMPLEMENTATION

Our department is committed to the implementation of FIRESCOPE terminology and the Incident Command System.

Over the past two years we have included FIRESCOPE terminology in all our publications. We have converted our day-to-day radio terminology to complement the use of FIRESCOPE terminology.

We will, within the next two weeks, publish a new Emergency Operating Plan (E.O.P.) in which we have included the Incident Command System (I.C.S.) as our only emergency operating procedure.

We will, in the near future, start a department-wide four-hour orientation class for all members.

With the advent of the "Core Area" we may be in a position in a few months to judge the adequacy of our efforts and what our course should be in the future.

S. E. MASSON, Fire Chief
County of Ventura

SEM:rt

FIRE PROTECTION
Your Best Buy

STATE OF CALIFORNIA
OFFICE OF EMERGENCY SERVICES
POST OFFICE BOX 9577
SACRAMENTO, CALIFORNIA 95823
(916) 421-4990

FILE COPY

EDMUND G. BROWN JR., *Governor*

FIRESCOPE

August 18, 1976

Robert Irwin
Firescope Program Manager
USFS Fire Lab - Riverside
Post Office Box 5007
Riverside, CA 92507

Dear Bob:

As a follow-up to the request you made on August 11, 1976, I am pleased to report that OES Fire and Rescue Division is commited to the acceptance and implementation of Firescope Terminology and every effort is being made to implement the system as quickly as possible.

Sincerely,

Dick

R. G. Barrows, Chief
Fire and Rescue Division

FILE COPY

FIRESCOPE

COUNTY OF LOS ANGELES

FIRE DEPARTMENT

POST OFFICE BOX 3009, TERMINAL ANNEX
LOS ANGELES, CALIFORNIA 90051

267-2467

RICHARD H. HOUTS
FORESTER & FIRE WARDEN

CHIEF ENGINEER
FIRE PROTECTION DISTRICTS

STANLEY E. BARLOW
CHIEF DEPUTY

"PRIDE IN OUR FREEDOM 1776-1976"

July 26, 1976

United States Forest Service
Fire Lab - Riverside
Post Office Box 5007
Riverside, CA 92507

Attention Robert Irwin,
Acting Program Manager

Dear Bob:

SUBJECT: FIRESCOPE TERMINOLOGY IMPLEMENTATION

Our Department is committed to implementation of FIRESCOPE Terminology and Incident Command System.

We are changing all official Los Angeles County Fire Department publication to include FIRESCOPE Terminology. Our Incident Command Procedure Manual is being rewritten to include Terminology and the Incident Command System. The revision of the Emergency Operation Procedures should be completed within the next three months.

Presently the original volumes 1 and 2 of the Incident Command System are included in every fire station library. All personnel have been instructed to become familiar with the Terminology and the Incident Command System. In 1974 one quarter of in service training was devoted to the FIRESCOPE, Incident Command System.

All Chief Officers and Battalion Training Captains, have had orientation and additional training in the FIRESCOPE Program. We have personnel assigned to every FIRESCOPE Incident Command System position and all personnel who presently have Emergency Operation Procedures assignments have corresponding Incident Command System assignments.

Questions on the FIRESCOPE Incident Command System have been included in our Promotional Examinations.

We will be doing additional training in the future, and the Department should have totally implemented the FIRESCOPE Terminology by fire season 1977.

Sincerely,

RICHARD H. HOUTS, CHIEF ENGINEER
LOS ANGELES COUNTY FIRE DEPARTMENT

By Stanley E. Barlow
STANLEY E. BARLOW, CHIEF DEPUTY

SEB:lp

State of California

Memorandum

FILE COPY

FIRESCOPE

Division of Forestry

To : Bob Burns
Jerry Letson
Clint Phillips
Jerry Reinecker
Lloyd Keefer
Jim Simmons

Date : February 18, 1976

File No.: F-2/2-18

From : State Forester's Office

Subject: TRAINING
In-Service

X-REF: FINANCE
Fire Organization

Thank you for your analysis of what system of fire organization the CDF should adopt and how the CDF should proceed to train its personnel in that system of fire organization. I appreciate your concern that the CDF should adopt only one system of fire organization, statewide. I also appreciate the large job of training that will be necessary for any one system.

Nevertheless, I must modify your recommendation because of the commitment that the CDF has made to use the FIRESCOPE fire organization in southern California. Therefore, the CDF will proceed in the following manner:

1. The CDF will use the FIRESCOPE fire organization in southern California on multi-agency fires whenever the cooperating agencies agree that FIRESCOPE is pertinent and should be used.

2. The CDF will use its present fire qualifications and organization system, as described in Handbook 5600, on all other fires located in the CDF's area of direct protection. All personnel in Region VI must be trained both in the FIRESCOPE organization and in the CDF's present fire organization.

3. All CDF personnel in the southern California Region will be trained in the FIRESCOPE organization as soon as practical to the extent that the organization has been described and that lesson plans have been prepared.

4. CDF personnel in all other Regions should be broadly acquainted with the principal concepts of FIRESCOPE but need not be given detailed training in its fire organization.

5. Under Jerry Reinecker's direction, Training Officer Jim Simmons and his staff should participate as fully as their time permits in assisting other agencies participating in the FIRESCOPE program to prepare additional lesson plans needed to train personnel in the FIRESCOPE organization.

6. As you recommended, the CDF should also incorporate into its own fire qualifications and organization system the appropriate parts of the National Interagency Fire Qualification System and of the FIRESCOPE system.

7. Also, as you recommended, the CDF should monitor the development of fire qualification systems by the National Fire Prevention and Control Administration and adopt parts of that organization's system, when applicable.

Larry Richey, State Forester

40

cc: All Regional Deputies
Rangers-In-Charge
Staff Assistants to the
State Forester

HI DESERT

MUTUAL AID ASSOCIATION

December 9, 1976

Mr. Bob Irwin, Manager
Fire Scope Program
U.S. Fire Lab.
4955 Canyon Crest Dr.
Riverside, Ca. 92507

Dear Mr. Irwin:

The Hi Desert Mutual Aid Association wishes to convey their feeling regarding the Fire Scope Program and what it can do for areas such as ours.

We feel the concept of the Fire Scope Program in relation to urban, wildland and natural disasters, in which the fire service is involved, will be an asset to all departments who participate in any large scale emergency. The Association also is in agreement that the continuation of this Program will help eliminate many problems which now exist in any large emergency, and also in our day-to-day operations.

The fire services in our area desire to be a part of this program and anything we can do to assist in the continuation of the Fire Scope Program will be returned to us two fold.

Respectfully,

Lester McFarlane

Lester McFarlane
Chairman

LMF:fm

SAN BERNARDINO MOUNTAIN MUTUAL AID ASSOCIATION
POST OFFICE BOX 158
RUNNING SPRINGS, CA 92382

December 8, 1976

Bob Irwin, Manager
Firescope Program
U. S. Fire Lab
4955 Canyon Crest Drive
Riverside, Ca 92507

Dear Bob:

The San Bernardino Mountain Mutual Aid Association would like to go on record as strongly supporting the Firescope Program as it relates to the urban and wildland fire problem and other major emergencies involving the fire services of Southern California.

Yours truly,

Bruce Horning

Bruce Horning, President

BH:bb

San Bernardino County Fire Chief's Association

December 9, 1976

Bob Irwin, Manager
FireScope Program
U. S. Fire Lab
4955 Canyon Crest Drive
Riverside, Ca. 92507

Dear Sir:

The San Bernardino County Fire Chief's Association would like to go on record as supporting the concept of FireScope. Not only do we support the concept relative to urban-wildland fire problems in Southern California but also other types of major emergencies in the Fire Service, such as earthquakes, atmospheric contamination, etc.

If this association can be of any assistance to you please feel free to call on us.

Sincerely,

L. E. Temby
President

LET:mr

RIVERSIDE COUNTY FIRE CHIEFS' ASSOCIATION

President
Paul E. Hamrick
First Vice President
Robert Maxwell
Second Vice President
Fred C. Woodard
Secretary-Treasurer
David L. Flake

Post Office Box 248
Perris, California 92370

December 10, 1976

Bob Irwin, Manager
FIRESCOPE Program
U. S. Fire Lab
4955 Canyon Crest Drive
Riverside, California 92507

Dear Mr. Irwin:

The Riverside County Fire Chiefs' Association supports the concepts of FIRESCOPE as they relate to the urban-wildland fire problems in Southern California.

We believe these progressive operational and communications developments can be equally applicable to other types of major emergencies affecting fire service operations, i.e. earthquakes, floods, and fire and rescue incidents.

The Riverside County Fire Chiefs' Association will cooperate with the FIRESCOPE program and assist wherever they can.

Sincerely yours,

PAUL E. HAMRICK, President

By David L. Flake
David L. Flake, Secretary

DLF:jck

San Diego County

FIRE CHIEFS' ASSOCIATION

December 9, 1976

Mr. Charles U. Ulrey
Office of Emergency Services
196 East Virginia Street
Rialto, California

Mr. Bob Irwin - Manager
FIRESCOPE
U.S. Fire Lab
4955 Canyon Crest Drive
Riverside - Calif. Fornia 92507

Dear Mr. Ulrey:

This letter is written to inform you that the San Diego County Fire Chiefs' Association is in support of the concept of the Fire Scope program as it relates to urban wildland fire problems or other major fire problems in which the Fire Service may be involved.

Sincerely yours,

Robert E. Shanahan

Chief R. E. Shanahan
President,
San Diego County Fire
Chiefs' Association

RES/jn

FOOTHILL FIRE CHIEFS' ASSOCIATION

December 8, 1976

Mr. Bob Irwin
Firescope Program Director
Riverside Fire Lab
4955 Canyon Crest Drive
Riverside, California 92507

Dear Sir:

The Foothill Fire Chiefs' Association would like to go on record as being strongly in support of the Firescope Program. The large regional concept for providing major fire forces, as established in Firescope, would be not only used in wildland fire situations, but also in major natural disasters, such as earthquakes. With the continued increase in the reduction of on-duty fire forces, the regional concept is being utilized more and more on the local levels by various fire departments, in order to assure services to their citizenry. The Firescope concept is an expansion of these local regionalizations and will materially aid in the fire services' capabilities in handling major disasters of any type.

We earnestly solicit the continued expansion of the Firescope concept in the State of California.

Sincerely,

CHARLES E. MASTEN
President

CEM:drs
cc: File

OFFICE OF
THE FIRE CHIEF

(213) 372-1171
EXTENSION 242-243

CITY OF REDONDO BEACH
CALIFORNIA

December 10, 1976

Mr. Bob Irwin
Firescape Program Director
Riverside Fire Laboratory
4955 Canyon Crest Drive
Riverside, California 92507

Dear Mr. Irwin:

I wish to convey the support voiced by the Area G fire departments for the concept of the Fire Scope Program. We have watched with great interest the work being accomplished during the past two years of its study and growth, and feel the concept should continue to its fruition. It is the end product with which we are vitally concerned, it application not only with man-induced disasters, such as wilderness fires, but also as it applies to natural disasters such as floods, earthquakes, and tidal waves.

We urge the program, its funding, and the concept be extended by whatever means possible, and support you in such a quest.

Sincerely,

James L. Black

James L. Black
Area G Coordinator

JLB:cp

TRI-COUNTIES
FIRE CHIEFS' ASSOCIATION

SAN LUIS OBISPO
SANTA BARBARA
VENTURA

DECEMBER 8, 1976

MR. BOB IRWIN
FIRE SCOPE PROGRAM DIRECTOR
RIVERSIDE FIRE LABRATORY
4955 CANYON CREST DRIVE
RIVERSIDE, CALIFORNIA 92507

DEAR BOB:

THE TRI-COUNTIES FIRE CHIEFS' ASSOCIATION WOULD LIKE TO EXPRESS ITS APPRECIATION TO YOU AND YOUR ASSOCIATES FOR THE FIRE SCOPE PROGRAM. WE ENCOURAGE, AND SUPPORT ITS CONTINUATION.

EXPANSION OF THIS PROGRAM, POSSIBLY IN THE AREA OF RESCUE SITUATIONS WOULD HAVE ADDITIONAL VALUE IN THE FIRE SERVICE.

THANK YOU FOR KEEPING OUR ASSOCIATION ABREAST OF THE FIRE SCOPE PROGRAM.

SINCERELY,

E. Jablonski

ED JABLONSKI
PRESIDENT

HAROLD M. HAYES, mayor
ERNEST E. ROWLEY, mayor pro-tem
council members:
NELSON GENTRY
PAUL JONES
TOM McCLURE

city of montclair

December 9, 1976

Bob Irwin, Manager
Firescope Program
U. S. Fire Lab
4955 Canyon Crest Drive
Riverside, California 92507

Dear Sir:

As chairman of the Southern Section, Communications Committee, of the California Fire Chiefs Association, I would like to take this opportunity to state that my committee is in full support of the concept of the Firescope Project as it relates to wildland emergencies and the communications technology being gained by the Fire Service.

Since the merger of the Firescope Communications working group with this committee, the communication engineers and the communication users are now cooperating for the optimum utilizations of existing and planned communications systems.

This committee is looking forward to the continued cooperation in assisting the Firescope Program in achieving its stated goals.

Sincerely,

Harold G. Duncan

Harold G. Duncan, Chairman
California Fire Chiefs Association
Communications Committee (Southern Section)

gl

fire department/8901 monte vista avenue/montclair, california 91763 / (714) 626-1217

DIRECTORS

E. P. FURMAN
PRESIDENT
J. W. BYLLING
SECRETARY
R.J.Jensen

FILE COPY
FIRESCOPE

C. D. GRAHAM
FIRE ENGINEER

MONTECITO FIRE PROTECTION DISTRICT

1486 VALLEY ROAD
SANTA BARBARA, CALIFORNIA 93108

TELEPHONE 969-2541

December 10, 1976

Mr. Bob Irwin
Fire Scope, Director-Manager
4955 Canyon Crest Drive
Riverside, Ca. 92507

Dear Mr. Irwin:

It has been brought to my attention that there is a possibility of a loss of Federal Funds for the Fire Scope Project. The results of the portions of the Fire Scope Program that have already been completed has shown what the potential benefits to all fire service agencies (Rural, Metropolitian & Forestry) can be when the entire project is finished.

The Fire Scope Program is virtually a breakthrough in multi-agency fire fighting and would also be a great benefit in local, state and national disasters.

It would be a shame to see the money and effort that has already been put into this project wasted. I sincerely hope that the project will not be lost.

Sincerely,

Charles D. Graham
Charles D. Graham
Fire Chief

CDG/kks

APPENDIX B

Potential National Applications of FIRESCOPE Technology

National benefits can be expected from the full implementation of FIRESCOPE. This paper presents an overview of those potential payoffs.

June 3, 1976

Potential National Applications of FIRESCOPE Technology

I. Advancement of Fire Services Concepts and Systems

FIRESCOPE will apply modern technology and systems to assist partner agencies in better coordination and cooperation through:

- Standardized Terminology, Incident Organization and Procedures
- Regional Multi-Agency Information Systems: integrating fire prediction capabilities with weather data and suppression resources status.
- Improved Interagency Communications Systems

Major metropolitan complexes across the country, where multiple agencies are involved, can use the FIRESCOPE Coordination System as a model or guide for the improvement of their own cooperative efforts.

Urban encroachment into wildland areas has become a serious national problem which will continue to rise in scale over future years. FIRESCOPE is pioneering in the systematic integration of both urban and wildland fire services. Here again, lessons learned in application can be transferred to other areas with similar situations.

Since FIRESCOPE provides a prototype for multi-agency coordination, another obvious potential application is in purely wildland areas where several agencies interface.

Thus, FIRESCOPE coordination concepts, supported by proper hard- and software systems have potential application in many parts of the nation: purely metropolitan, urban-wildland mix areas, and essentially wildland. The key concern in "targeting" FIRESCOPE is the diversity of fire services currently protecting a given area.

II. Application of Specific Components

Within the FIRESCOPE system there are specific elements of hardware and software which may be useful in and of themselves without application of the total concept, and separate from the coordination values mentioned above. Examples are:

A. Hardware:

- Communications vehicles can be utilized to facilitate communications at any type of major disaster--fire, flood, earthquake, etc.

- "Caches" of personal-portable radios (20-40 units) could be transported to disaster areas, either with or without the communications vehicles to provide dispersed communications capabilities.

- Infrared telemetry systems are also transportable. These could be utilized on major wildland fires anywhere to increase the intelligence-gathering abilities of the fire command staff. The mobile ground units could be readily integrated into the "Total Mobility" concept being encouraged by the National Wildfire Coordinating Group.

B. Software:

- Computerized information and data systems are an essential part of FIRESCOPE. It is by virtue of these capabilities that the variety of multiagency resources will be inventoried and "tracked" during emergencies.

  Although the specific systems to be implemented in the FIRESCOPE Region will not be suitable for any other area, the system design could be adopted by any group of agencies choosing to improve their coordination and cooperation.

- FIRESCOPE System training will be primarily aimed at the six major partner agencies and the 250-odd smaller fire services within the Region. In addition, California Division of Forestry personnel throughout the state, and Forest Service people outside of the California Region must receive adequate training in various functional areas.

- The effective accomplishment of this massive and complicated training job will require new and unique approaches. The programs, materials, and methods used for FIRESCOPE could become models for multiagency integrated training efforts nation-wide. The "models" would be particularly valuable to agencies such as the National Fire Prevention and Control Administration and the Federal Disaster Assistance Administration who must continually deal with diverse agencies, policies, and educational effectiveness.

III. Knowledge and Expertise

FIRESCOPE is a system of people that will make its hard and soft components operate. Those people involved will amass considerable experience over the next few years. Such experience can be valuable to others wishing to improve their operations and coordination procedures in multiagency emergency situations. The knowledge and expertise resulting from FIRESCOPE implementation will provide national recognition of the applicable FIRESCOPE concepts to other problem areas. This will be based upon the organizational lessons and structures learned from implementing a major program with diverse and separate partners. The entire effort will provide other potential users with a skills-pool which will be available as planning resources and consultants over a long period of time.

IV. Continuing Research

Nearly $5 million will be expended to produce FIRESCOPE. These funds have, and will continue to, develop the concepts, designs, and models which make up the system. The implementation of FIRESCOPE will provide an invaluable information source and "test-bed" for future Fire Management Systems research and development. Much of these efforts will have national applicability.

SUMMARY CHART

POTENTIAL FIRESCOPE NATIONAL APPLICATIONS

ELEMENT	USE OR ADAPTATION	SCOPE (National, local, etc.)	POTENTIAL USERS
I. Concepts and Systems			
Standard Terminology Organization, Procedures	Better communication and cooperation	Major metropolitan areas, urban-wildland interfaces, multiagency responsibility areas	Large cities, Federal and State Land Mgt. areas, Boise Interagency Fire Center, Wasatch Interagency Fire Center
Regional Multiagency Information Systems	Improved information processing systems resulting from adaptation of the conceptual design	Same	Same
Interagency Communications Systems	Better communication and cooperation	Same	Same
II. Specific Components			
Hardware:			
Communications Vehicles	Fire, flood, major disaster	National application to supplement local abilities	Any disaster area
Radio Caches	Fire, flood, major disaster	National application to supplement local abilities	Any disaster area

SUMMARY CHART

POTENTIAL FIRESCOPE NATIONAL APPLICATIONS

(Cont'd)

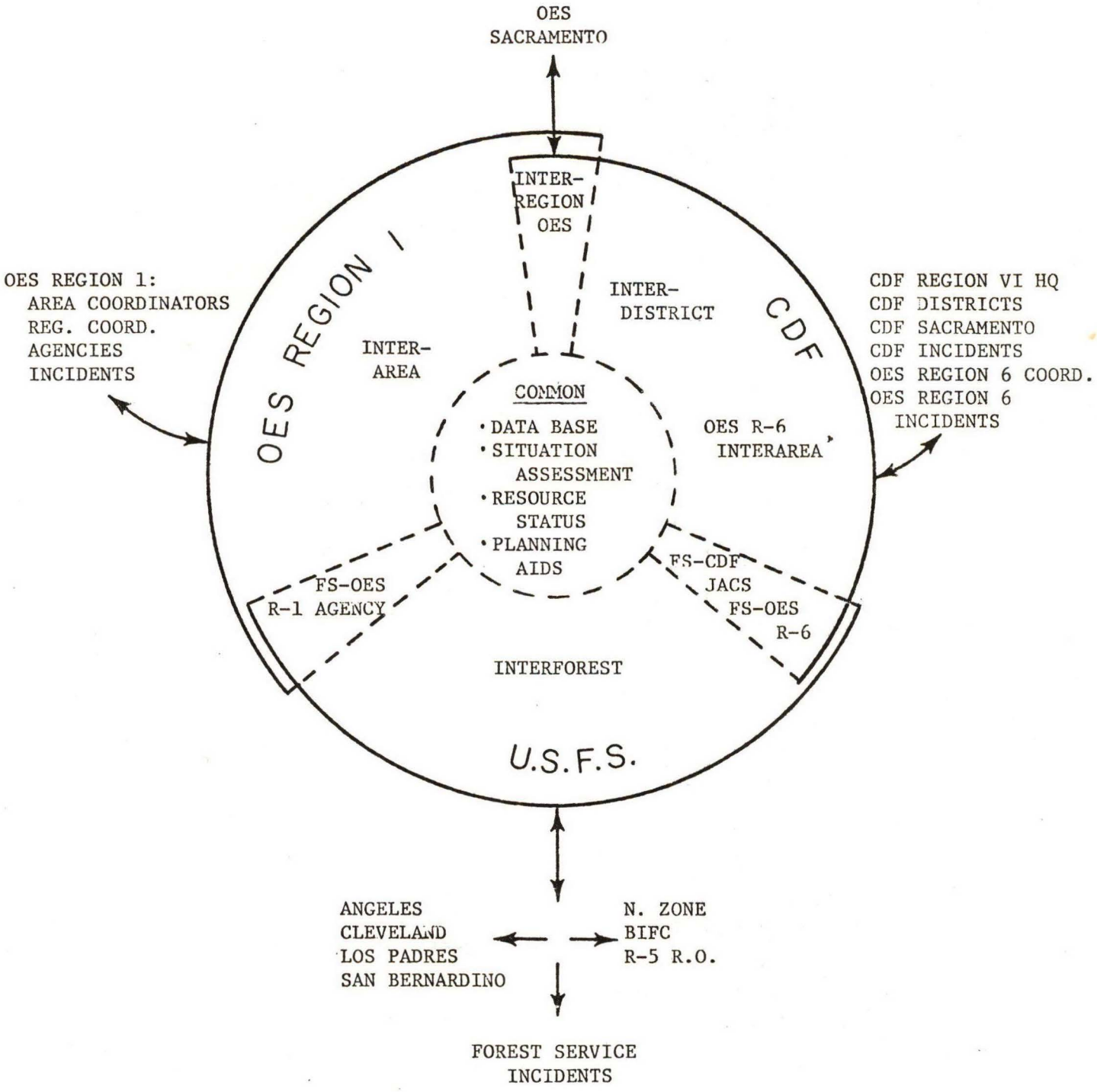
ELEMENT	USE OR ADAPTATION	SCOPE (National, local, etc.)	POTENTIAL USERS
Infrared	Major wildland fires	Federal wildlands State protection areas	Federal wildland mgt. agencies State wildland mgt. areas
Software:			
Data Systems	System design can be used as guide	Any multiagency group	As in I, above, plus NFPCA, FDAA
Training	Use models as guide	National	NFPCA, others
III. Knowledge and Expertise			
System Analysis, Research Design and Development	Skills pool for National application	National	National Science Foundation Forest Service, BLM, etc
Organizational Lessons	Use as model	National	Potentially unlimited
IV. Continuing Research			
Monitor and Test	Isolate future research efforts	National	Forest Service and other research and development
Fire Mgt. Models	Expand to other wildland areas	National wildlands	Forest Service, BIA, BLM, NPS

APPENDIX C

Statement of Intent-FIRESCOPE Program
OES Role in Operational Coordination Center

FIRESCOPE OCC

INITIAL IMPLEMENTATION



RC/GA 1/76

STATEMENT OF INTENT -- FIRESCOPE PROGRAM

OES Role in Operational Coordination Center

The research and development of the FIRESCOPE Program has defined the concept and functional requirements for a Multi-Agency Coordination System (MACS) with a single, centralized Operational Coordination Center (OCC). When activated and functioning fully, this center will have the capability to provide major assistance to the various fire protection agencies, both in regional and resource planning and allocation, and in support of individual major incidents.

Operational system capabilities will require supporting dynamic information systems, including:

- Regional data base
- Regional resource status and situation assessment
- Regional information transfer
- Data processing (including planning aids)

Because of the interrelated nature of these supporting systems, it is most efficient that the day to day input and maintenance be done by a single entity, and it is the concensus of participating fire agencies, the State Office of Emergency Services (OES) should assume this responsibility.

The specific OCC functions, as consistent with the approved FIRESCOPE concept, which are proposed at this time for performance by OES, include:

- Maintenance of the regional data base, including coordination of individual agency and external information collection and updating processes.
- Maintenance of dynamic regional situation information systems to support OCC operational needs, through coordination of individual agency information collection and transfer requirements and procedures, and specially developed FIRESCOPE systems.
- Maintenance and operation of information processing and display systems developed to provide support to agencies and individual incidents.
- Assistance to agencies in coordination of communication requirements for major incidents on a regional basis.

- Administration and coordination of inter-agency resource allocation under the State OES Master Mutual Aid Agreement.

- Establishment and administration of a Document Control System to efficiently issue and revise operational manuals and other publication.

It is understood, in assuming these responsibilities in the FIRESCOPE MACS and OCC, the OES will provide, as its contribution to ongoing costs in the operation of the program, general administrative support and operational personnel on an equitable, proportional basis. Such support would include, but not be limited to, housekeeping, financial management, supervision of OES operational personnel and such other resources or input applicable to the ongoing OES program. All OES support will be on a voluntary basis, to the extent practicable, using existing personnel and funding until such time as more formal commitments to the program are made by all participating agencies, and some form of dedicated FIRESCOPE implementation funding becomes available.

It is also understood that those special personnel that may be required to manage and/or operate such facilities will be provided in accordance with the standards set forth by the agency FIRESCOPE Board of Directors, subject to such fiscal arrangements that are satisfactory to all concerned.

It is also understood that other agency personnel may be present at the center to perform those essential discrete functions of their respective agencies which are compatible with the concept of an integrated OCC.

The FIRESCOPE Board of Directors will oversee the testing of the above OCC functions and will set policy for operation and maintenance of the FIRESCOPE system.

Finally, it is understood that the above functions are totally contingent upon the availability of implementation and annual operating funds and a suitable facility location.

California Division of Forestry

Los Angeles Fire Department

Los Angeles County Fire Department

Santa Barbara County Fire Department

U.S. Forest Service, Region 5

Ventura County Fire Department

Office of Emergency Services

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